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OCTOBER, 1931

VOLUME 11—NUMBER 5

PACIFIC COAST
SURGICAL ASSOCIATION NUMBER

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THE NEW MAYO CLINIC VOLUME



wealth of original—and practical—material is now made available to *all* members of the medical profession in this new volume of Collected Papers of The Mayo Clinic. It contains the new and improved diagnostic methods, the new methods of treatment and prevention, the refinements of technic, and reports of the original work of the staffs of The Mayo Clinic and The Mayo Foundation. This new volume contains 169 articles.

The practitioner and the surgeon are equally appreciative of the unusually valuable clinical material in this noted volume. In this year's volume, for instance, the general practitioner will derive much help from the articles on the diagnosis and the serum treatment of colitis, ununited fractures and their treatment, susceptibility to cancer, migraine and its treatment by the ketogenic diet, clinical features of obstructive jaundice, indications for operations on the kidneys, Addison's disease and its treatment, gastric tissue in the treatment of anemia, the significance of temporary blindness. These articles and many others will be found of definite interest to practitioners.

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THE SURGICAL CLINICS OF NORTH AMERICA

Volume 11

Number 5

CLINIC OF DR. REXWALD BROWN

COTTAGE HOSPITAL, SANTA BARBARA, CALIFORNIA

CARCINOMA OF PANCREAS

THIS patient's condition has been studied by Dr. Harold Schwalenberg since November 4, 1930. A positive diagnosis has not been made although malignancy in front of the left kidney is suspected. Hope is that the mass felt in the upper abdomen is benign and removable. The patient is thirty-one years of age and for two years past has complained of more or less steady upper abdominal distress, nausea, and occasionally attacks of sharp pain. During recent weeks her endurance has decreased and there has been considerable loss of weight. Pycnograms show normal contours and as the gastro-intestinal series reveal no abnormalities it is concluded the mass is outside the kidneys, the stomach and intestines.

The incision is through the left rectus. An infiltrating inoperable mass, size of a large orange, adherent to colon and small intestines presents itself. A piece of the mass is resected and handed to the pathologist, Dr. Richard Evans. While waiting for the microscopical report on the frozen section and during the closing of the abdomen, I wish to say a few words about the now much heralded Coffey-Humber extract in the treatment of carcinoma.

A short time ago we had another patient with carcinoma of the pancreas. He was fifty-eight years old. One of my associates, Dr. H. O. Koefod of the Santa Barbara Clinic, asked me to remove a small tumor from the left side of the patient's abdominal wall below the umbilicus. The patient had for several months presented a picture of decreasing strength, loss of weight, poor appetite and malaise. Repeated studies of the gallbladder, lungs, heart, stomach, intestines and kidneys gave no diagnostic information.

The small tumor was found to be a carcinoma, undoubtedly metastatic from some internal organ. It was decided not to do an exploratory laparotomy. The family was advised that the carcinomatous condition had advanced beyond the power of surgery to be of any service and that death

FOREWORD—The clinics in this volume have been contributed by fellows of the Pacific Coast Surgical Association. This association is composed of surgeons living in California, Oregon, Washington, British Columbia, and Hawaii.—*Edgar L. Gilcrest, Secretary*

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TRAUMATIC RUPTURE OF THE URETHRA

This patient is a student of seventeen years. Late this morning he fell violently astraddle of the rocker of a chair. There was severe pain in the perineal region, hemorrhage from the urethra and inability to urinate. He was referred to and brought to the Santa Barbara Clinic by Dr. Harold Wright from the Ojai valley over the mountains. Examination at this time reveals considerable local swelling in the perineum and extravasation into the scrotum.

The clinical history, the symptoms and the findings lead to no other conclusion than traumatic rupture of the urethra. While my associate, Dr. Irving Wills, operates upon this young man, I wish to call attention to the use of catheterization as a diagnostic or therapeutic measure. Of course it is impossible to know positively immediately after the injury whether there is a tear of minor or major degree in the urethra or whether it is proximal or distal to the deep perineal fascia. No catheterization should be attempted unless the doctor is prepared to follow nonpassage of the catheter by operation. The successful passage of a catheter under strict aseptic precautions, liberating the urine in the bladder, is indicative in the greater number of cases of a minor tear or contusion which will repair itself satisfactorily if the catheter is permitted to remain for a few days.

If a catheter does not pass, operation must be done at once, not because a false passage may have been produced through the edematous and infiltrated tissue but because the passage of a catheter may infect the devitalized tissues. A sterile catheter can stir up the microorganisms which lie in the urethra. The development of cellulitis, particularly above the triangular ligament, is more serious than in other parts of the body as there is no outlet for the confined pus. Septic thrombus formation in the venous plexuses becomes very rapid with increasing systemic toxic absorption.

Dr. Wills, you will note, has made a perineal incision over a sound. If the patient's condition was desperate, which it probably would be if a day or more had elapsed since the injury and catheters had been passed, no more would be done than the removal of the clot of blood which you see and the passage of a catheter through the proximal segment into the bladder to provide the needed drainage.

Observe the progress of the surgical procedure. The urethra is isolated and now it is seen that there is a tear through the triangular ligament exposing a completely severed membranous portion of the canal. It is somewhat difficult to find the proximal segment in the lacerated tissues. Now it is picked up with forceps. A 28 F catheter is guided through the penis into the bladder. The severed ends of the urethra are carefully sutured about the catheter.

Note—The patient made an uneventful recovery and left the hospital on the sixteenth day voiding easily.

was probably only a few weeks distant. Members of the family and close friends elected to try the Coffey Humber extract the efficacy and value of which had not been proved. The psychology of the family fully cognizant of surgery's inadequacy in the matter wishing to maintain the life of a dear one and able to command anything which money can buy grasped at a straw. It is a trait of humans the strong as well as the weak to refuse acceptance of the mandate of death.

The extract was administered intensively twice a week by one of the two discoverers of the extract. The patient steadily went down hill profound jaundice developed and death appeared in six weeks. During these final weeks 10 to 16 grains of codeine was administered daily to deaden pain. The postmortem revealed carcinoma of the head of the pancreas with metastases to the liver and retroperitoneal lymph glands. No liquefaction was found in pancreas liver or glands. The originators of the treatment claim that such liquefaction leading to a cure occurs in carcinoma cases treated with their suprarenal extract.

In a series of autopsies on carcinoma cases dead after the Coffey Humber extract has been given, posted in the Cottage Hospital, no marked changes in carcinoma tissue suggestive of regression were found. Research investigation in the Cottage Hospital on a series of cases of rat sarcoma demonstrated that those treated with the Coffey Humber extract as contrasted with the controls not so treated showed like results, *i. e.*, the usual changes which occur in malignancy.

Unquestionably certain malignant conditions, especially those on the external surface of the body, have shown regression and even disappearance under the Coffey Humber extract. This, however, cannot be called cure in any larger sense than the regression and disappearance of carcinoma under radium x ray lead, other extracts and even spontaneous regression can be called cure. (Dr Evans reports that the specimen is carcinoma.) The Coffey Humber extract is one of a large number of agents which not infrequently cause recessive changes in certain types of carcinoma.

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Note—The patient made an uneventful recovery and left the hospital on the sixteenth day voiding easily.

ENDOMETRIOMA OF UMBILICUS

This patient is thirty six years of age. She is white and gives a history somewhat out of the ordinary. A year ago she noted a swelling of the umbilicus before and during menstruation. Each succeeding month the swelling increased and from the swelling for the last three or four months there exuded a bloody discharge during the first hours of the menstrual flow. The umbilical mass is the size of a hazel nut.

The past and menstrual history is not of value in this picture. Examination has revealed a tender, discolored, edematous trilobate mass in the umbilicus elevated above the level of the surrounding skin. The uterus is retroverted and there is a tender, fixed right ovary the size of a hen's egg.

The interesting feature of this case is the tumor in the umbilicus. It is our conviction the condition is one of ectopic endometriosis. This belief is based on the enlargement of the mass and the bloody discharge therefrom at each period.

The theory concerning the clinical picture of what is known as endometriosis has been developed during the past ten years. The ideas of Dr. Sampson of Albany on the condition are now usually accepted. Sampson states that there occur implants of endometrium on various parts of the peritoneum, especially on the ovaries. The implants are due to the escape of small pieces of endometrium incident to a yet unexplained retrograde flow through the tubes at menstrual periods. Jacobson has convincingly demonstrated after experiments on animals, that endometrium will grow after transplantation on peritoneal surfaces.

As periodic monthly bleedings from the uterus are due to the influences of hormones it is reasonable to assume that bleedings at monthly menstrual periods from growths in contact with peritoneal surfaces are of endometrial origin, subject to the same influences as the endometrium lining the interior of the uterus. Though endometriomata are not infrequently met—a chocolate cyst of the ovary is often one—in the neighborhood of the umbilicus they are rare.

My associate, Dr. Lawrence Eder, is now operating upon this woman. You will note there are no adhesions between the

umbilicus and the subjacent organs. The uterus is small and retroverted. The right ovary is enlarged and adherent to the terminal ileum. On separating adhesions a cyst in the ovary breaks, allowing the discharge of dark brownish fluid. Dr Eder removes the right tube and ovary as well as the appendix and a small fibroid from the uterus. Before closing he resects the umbilicus with its attached mass.

DISLOCATION OF MANUBRIUM OF STERNUM

This patient has just come from the x ray department Four hours ago he was jackknifed under an auto His head was forced between his knees by the weight above He complained of pain in the sternal region Dr H G Hanze of Solvang has brought him to the Santa Barbara Clinic My



Fig. 311.—Dislocation of manubrium after partial reduction

associate Dr Rodney Atsatt has ascertained that the injured man has a *complete posterior dislocation of the manubrium on the gladiolus* with overriding also there is a transverse fracture of the gladiolus

Observe Dr Atsatt's reduction of this very infrequently seen dislocation The patient is on the table in dorsal hyperextension with a high pad beneath the lower scapulae After hooking the fingers over the projecting top of the

gladiolus downward traction is made as countertraction through the axillae is made by the house surgeon. A reduction is accomplished restoring to normal the angle of Ludovic. The anterior aspect of the chest is strapped with adhesive.

This uncommon injury has scant attention in the literature. It may be well to call attention to the probably largely forgotten knowledge that there is a true articulation of the synchondrosis type between the manubrium and gladiolus. In suspected or known injuries of the sternum the x ray projections should be right oblique, left oblique, and direct lateral. This will secure the best pictures for interpretation (Fig. 311).

Note.—The patient made a satisfactory recovery without deformity.

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CLINIC OF DRS HAROLD BRUNN AND FRANKLIN I HARRIS

MOUNT ZION HOSPITAL SURGICAL CLINIC, SAN FRANCISCO,
CALIFORNIA

IDIOPATHIC GANGRENE OF THE SCROTUM

THE case we are presenting is of unusual interest because of the rarity of this serious condition and the successful outcome following treatment with anti anaerobic antitoxin

The patient a male age forty years a painter by occupation entered our clinic on January 3 1930 with a diagnosis of subacute appendicitis and hypertension. His general physical examination was negative except for the local tenderness and muscle guarding over McBurney's point and a hypertension of 190/108. Operation was performed on the day of entry and a subacutely inflamed appendix was removed with no technical difficulties through a McBurney incision.

The immediate postoperative condition was uneventful the highest elevation of temperature being 101 F. for the first two postoperative days following which the temperature remained normal. On January 8th the 5th postoperative day the skin clips were removed and the wound found to have healed per primum.

On the evening of January 9th the sixth postoperative day, the patient's temperature suddenly rose to 104 F. and he complained of a swelling of the scrotum. Examination showed a marked bilateral edema of the scrotum. The patient's blood pressure had dropped from 190/108 to 70/40 and his pulse was rapid and thready. He looked very badly. It was at first thought that the drop in blood pressure and edema of the scrotum represented an acute myocardial failure but no edema of the extremities or lungs could be demonstrated. The abdominal incision, at this time appeared clean.

The following morning January 10th the patient appeared very toxic. There was a slight but definite icteric tinge to his skin and mucous membranes. The edema of the scrotum had increased and on the right side a small gangrenous area the size of a dime appeared. Within the following twelve hours this area rapidly spread new gangrenous areas appeared and for the first time there was noted a suggestion of crepitation in the right half of the scrotum. The patient appeared much more toxic, his temperature

was now subnormal. A tentative diagnosis of anaerobic infection of the scrotum was made and a wide excision of the gangrenous tissue performed. At this time 100 cc. of Cutter's polyvalent anti-anaerobic antitoxin was given intramuscularly. On the following day the patient appeared brighter, no new areas of gangrene were seen, but there appeared an extension of the edema from the scrotum upward over the pubes and the abdomen involving the lower half of the McBurney incision. On January 13th the edema had spread upward over the left half of the abdomen into the left flank. The skin over this area was indurated and presented a rose-colored appearance with a definite border and was characteristic of an erysipelatous eruption. At this time 5000 units of erysipelas antitoxin were given intramuscularly.

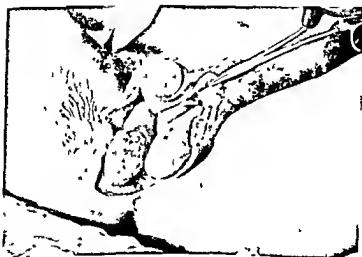


Fig. 312.—Showing extent of the destruction of the scrotum.

ing room

Operation. Debridement of perineum and scrotum. The patient was
and prepared for

and by pressing on this area gas bubbles could be made to escape through a small necrotic area in the perineum. The scrotum was resected almost entirely with the Percy cautery so that only a narrow fringe of scrotal tissue was left. It was found that the process had extended high up in both the ischio-rectal fossae destroying the fat and connective tissue. Exploration was becoming so wide and deep at this part of the operation it was decided to introduce a metal sound into the urethra so that the urethra could be avoided in the dissection. After all the necrotic tissue had been carefully excised a



Fig. 313—Shows extent of involvement of inguinal region and flank in the spread of the gangrene

hot massive compress of potassium permanganate solution was introduced into the wound and Dakin's tubes laid into the dressings and scrotal wall. Through these tubes every two hours there was alternately allowed to run a solution of one six thousand potassium permanganate and hydrogen peroxide. (Figures 312 and 313 show the extent of the debridement at this operation.)

The patient's general condition improved for the first two days following this procedure but on January 18th the temperature again rose and in the region of the left flank, where previously there had been noticed the erysipelas

was now subnormal. A tentative diagnosis of anaerobic infection of the scrotum was made and a wide excision of the gangrenous tissue performed. At this time 100 cc. of Cutter's polyvalent anti-anaerobic antitoxin was given intramuscularly. On the following day the patient appeared brighter, no new areas of gangrene were seen, but there appeared an extension of the edema from the scrotum upward over the pubes and the abdomen involving the lower half of the McBurney incision. On January 13th the edema had

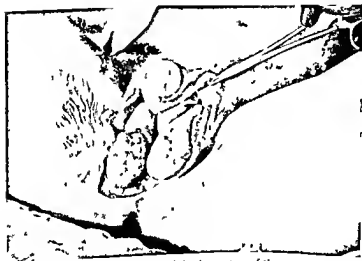


Fig. 312—Showing extent of the destruction of the scrotum.

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Incision of perineum and scrotum. The patient was

temperature was normal and remained so throughout his stay in the hospital. He looked and felt much better. No further extension of the gangrenous process was noted.

Irrigation of the wounds was continued with the oxidizing agents until January 30th when Dakin's solution was substituted and daily smears taken to determine when secondary closure would be feasible. Smears from the abdominal wounds were negative for any organisms on February 1st 2d and 3d and on this last mentioned date a secondary closure was made of both abdominal wounds. In performing this closure a debridement of the skin edges was first done and the wound closed with retention sutures of heavy braided silk. No vessels were caught and no catgut was used throughout the entire procedure. The silk sutures were removed twelve days later both abdominal wounds having healed per primum.

Dakinization of the scrotum was continued the scrotal skin regenerating very rapidly. On March 8th approximately seven weeks after the original débridement a secondary closure of the scrotum was performed. It was unnecessary to utilize any skin grafting procedure due to the remarkable regeneration of the scrotal tissue. It was only necessary to free the scrotal skin from the thigh in order to secure an easy closure. This wound also healed per primum and the patient was discharged on March 22d completely recovered. (Figure 314 shows final results.)

Discussion—The case we have described is illustrative of the condition known as "idiopathic gangrene of the scrotum." For a brilliant review of this interesting subject we refer you to the excellent paper of T. E. Gibson who has summarized the observations on the 206 reported cases in the literature (Journal of Urology, January, 1930). It is a syndrome which has been variously alluded to in the literature as "gangrenous erysipelas of the scrotum," "streptococcic scrotal gangrene," "spontaneous fulminating gangrene of the scrotum" and "Fournier's gangrene."

The cardinal characteristics were well illustrated in our case, namely, (1) the sudden explosion of the phenomenon in the midst of apparent health, (2) the rapid evolution of mortification, (3) and the apparent total absence of any of the usual causes of gangrene.

The condition has often been confused in its diagnosis with passive edema of the scrotum due to nephritis and cardiac insufficiency, or with acute epididymitis and occasionally even with acute cholecystitis or hepatic cirrhosis because of the presence of generalized icterus. This last mistake in diagnosis

there was now definite crepitation to palpation. On the right side of the abdomen there was also edema and crepitation as high as the appendix incision. It was decided to again take the patient to surgery. Operation

involved in a manner similar to that which had been found in the scrotum namely marked destruction of the fat and subcutaneous tissue with the formation of gas. The muscles were spared but a portion of the fascia of the external oblique was involved in the gangrenous process. As far as possible the necrotic tissue was removed and the wound irrigated with potassium per



Fig. 314—Final result following secondary closure of abdominal wound and scrotum

manganate solution. It was found that by irrigating the upper wound the irrigating fluid ran through the external inguinal region into what had once been the scrotum. The three wounds therefore were now connected the original appendectomy operative site, the scrotum and the new incision in the left abdomen. (Figure 313 shows the extent of the second débridement operation.)

Following this operation another 100 cc of Cutter's polyvalent anti-anaerobic antitoxin was given intramuscularly and irrigations of potassium permanganate solution and hydrogen peroxide continued through the Dakin's tubes.

On January 19th the day following this last procedure the patient's

isolated from our other similar case which occurred later in our clinic Dr Eberson expects soon to publish a complete description of the cultural and pathogenic characteristics of this anaerobe

The portal of entry for the infecting organism is most puzzling In the majority of reported cases there was no external lesion or disease of the genito urinary tract which might offer an explanation of the causation It is for this reason that the condition has been described as idiopathic We consider the preceding appendectomy in our case as purely coincidental In the second case occurring in our clinic there was no previous operative procedure

Treatment—As the mortality is high (26 per cent quoted by Gibson) radical surgery must be performed if the patient is to be saved extensive debridement of the involved tissues must be carried out exactly in the manner of the ordinary type of gas gangrene

Treatment with polyvalent anti anaerobic antitoxin seems most rational and the result in our case following its use was a most striking and convincing proof of its value A total of 400 cc of Cutter's serum was used in this case but no set dosage can be established The amount of antitoxin will depend upon the clinical reaction of the patient to its use

When our research laboratories have completed their studies of this new anaerobe and established its pathogenesis as the causative factor of this disease we believe that the addition of these organisms to the anti anaerobic antitoxin will add very considerably to its efficacy in the treatment of this disease

We believe the use of erysipelas antitoxin is likewise indicated as unquestionably the streptococcus of erysipelas thrives in symbiosis with the infection anaerobe

Local treatment consists of following up the debridement with continuous irrigations of oxidizing agents such as hydrogen peroxide potassium permanganate and even pure oxygen run in through tubing into the wound When the acute infection subsides Dakin's technic seems ideal to prepare the tissues for a secondary closure

was made in our second case which we are not reporting at this time but which was treated on our medical wards as a possible hepatic cirrhosis until the development of gangrene of the scrotum cleared up the diagnosis.

The progress of the disease is always the same: first involvement of the scrotum, then spread of the gangrene upward, the extension being similar to the manner in which urinary extravasation follows the fascial planes—beneath Colles' fascia of the perineum, scrotum and penis and Scarpa's fascia of the abdomen. The entire scrotal skin, subcutaneous tissue, fascia, dartos, sloughs away leaving the testes, "bared to their tunica hanging suspended by their cords shamefully exposed though remarkably free from gangrene." With the removal of the gangrenous tissue regeneration can usually be expected and with careful dressings a new scrotum can be made to enclose the testes but little different from its predecessor.

Etiology.—Although there are 206 cases of this peculiar type of fulminating gangrene of the scrotum reported in the literature there has been no uniformity of opinion as to the nature of the etiologic organism. All authors are agreed that the condition is of infectious origin and many attribute it as due to *Streptococcus haemolyticus*.

The rapidity of the spread of the gangrene, the profound toxemia and frequent presence of crepitation in the tissues has no clinical parallel except in cases of gas gangrene. Unlike the usual cases of gangrene there is no involvement here of the muscles. The gangrenous process being confined only to the skin, subcutaneous tissues and fascia. An anaerobic organism has been sought in previous cultural studies but without much success due to the technical difficulties in growing such organisms.

We have been especially fortunate in having the collaboration of our Director of Research, Dr. Frederick Eberson, who was able to secure from our case fresh material for anaerobic cultures in many different types of media. Dr. Eberson has finally succeeded in isolating a hitherto undescribed anaerobic bacillus which grows in symbiosis with a streptococcus and is exceedingly difficult to cultivate. This same organism he has

isolated from our other similar case which occurred later in our clinic Dr Eberson expects soon to publish a complete description of the cultural and pathogenic characteristics of this anaerobe

The portal of entry for the infecting organism is most puzzling In the majority of reported cases there was no external lesion or disease of the genito urinary tract which might offer an explanation of the causation It is for this reason that the condition has been described as 'idiopathic' We consider the preceding appendectomy in our case as purely coincidental In the second case occurring in our clinic there was no previous operative procedure

Treatment—As the mortality is high (26 per cent quoted by Gibson) radical surgery must be performed if the patient is to be saved extensive debridement of the involved tissues must be carried out exactly in the manner of the ordinary type of gas gangrene

Treatment with polyvalent anti anaerobic antitoxin seems most rational and the result in our case following its use was a most striking and convincing proof of its value A total of 400 cc of Cutter's serum was used in this case, but no set dosage can be established The amount of antitoxin will depend upon the clinical reaction of the patient to its use

When our research laboratories have completed their studies of this new anaerobe and established its pathogenesis as the causative factor of this disease we believe that the addition of these organisms to the anti anaerobic antitoxin will add very considerably to its efficacy in the treatment of this disease

We believe the use of *erysipelas* antitoxin is likewise indicated as unquestionably the *streptococcus* of *erysipelas* thrives in symbiosis with the infection anaerobe

Local treatment consists of following up the debridement with continuous irrigations of oxidizing agents such as hydrogen peroxide potassium permanganate and even pure oxygen run in through tubing into the wound When the acute infection subsides Dakin's technic seems ideal to prepare the tissues for a secondary closure

CLINIC OF DRS THOMAS O BURGER AND C J OSBORNE

MERCY HOSPITAL, SAN DIEGO, CALIFORNIA

FOUR CASES OF RETROPERITONEAL TUMORS

THE following cases which we wish to present include histologically three different types of retroperitoneal tumors. A fourth case, a tumor of the kidney, although not grouped under the classification of retroperitoneal tumors, is interesting in view of the fact that many retroperitoneal tumors have their origin at or near the hilus of the kidney, and on clinical examination it is difficult many times to differentiate between an enlarged kidney and a retroperitoneal tumor.

Case I—History—W S male forty nine years of age. When first seen complained of distress in the upper right abdomen and stomach. Up to two months ago never complained of any distress in the abdomen. At the onset of this disturbance the complaints were vague. The distress was associated with gas on the stomach and bowels. The appetite was only fair and constipation very aggravating. On eating all foods caused distress in the stomach and upper right quadrant. Within the past few days he noticed some swelling of the ankles and for the past month there had been some frequency of urination but no nocturia, dysuria or hematuria. His past illnesses were pneumonia years ago and an injury received one year ago when kicked twice in the right lower ribs posteriorly by a mule.

Physical examination revealed a well developed man weighing 200 pounds. The cardiac apex was in the fifth intercostal space.

no abdominal tenderness

blo
cel

incision was made extending from the costal margin to below the umbilicus. On

The posterior parietal peritoneum was incised and a lobulated fatty tumor removed. A large tongue-like protrusion extended through the dilated femoral ring for a distance of 15 inches. The entire mass was encapsulated and removed *en toto*.

Pathologic Examination—Encapsulated lobulated lipoma measuring 8 x 5 x 5.5 inches. On section was of firm even consistency with no areas of degeneration or malignancy. Postoperative convalescence was uneventful and recovery rapid.

Discussion—This case presents many interesting features. First, the site of origin was in the femoral canal of the thigh and gradually expanding forced itself upward into the retroperitoneal space of the abdominal cavity. On examination no pressure effects on the circulation were noted in the right leg and no subjective symptoms were present. Second retroperitoneal tumors frequently go unnoticed by the patient until they have attained a considerable size. Unless mechanically obstructing some organ there are no especial symptoms to warrant their presence other than those occurring from pressure. In the upright position posterior tumors, even though quite large, most often go unnoticed, and their presence is very frequently discovered by accident. Third, pure lipomata are not so frequently encountered retroperitoneally as usually supposed. Many reported as lipomata have often recurred, showing evidences of sarcomatous or myxomatous tissue changes, even after careful histologic examination of the primary tumor. In consideration of this tendency to recurrence the surgeon must give a guarded opinion as to the prognosis and institute treatment similar to that in other malignant neoplasms. This patient died two years following operation with arteriosclerotic heart disease with congestive failure. An autopsy was obtained and no evidence of recurrence of mass in retroperitoneal position or evidences of metastasis especially in the lung or mediastinum, were found.

Case III—History—M. M. aged forty seven years female. Stated that five months ago she first noticed the beginning of another mass in right side of abdomen. Although she had noticed this mass was growing rapidly there was no pain. The only complaints were fulness after eating and increasing constipation with gas. The general health was good and there was no loss of weight. Exactly three years previously she accidentally found

exploration the right kidney was normal on palpation. A firm rounded mass the size of a large grapefruit was found in the upper abdomen to right of the duodenum and beneath the posterior parietal peritoneum. An incision was made in the latter and the tumor shelled out in large masses. During this procedure considerable hemorrhage occurred from the tumor bed. The abdomen was closed after packing the tumor space with 2 inch gauze roll and bringing end out through upper angle of wound. During the latter part of the operation the pulse became weaker and the patient was returned to room in poor condition.

Pathologic Examination—Tissue removed represents several large pieces of nonencapsulated firm vascular masses. Histologically the cell structure is that of a medium round-cell sarcoma.

After returning to room from operation the patient's condition gradually became weaker. There was no response from fluid infusions or stimulation and five hours later expired in a shocked condition.

Discussion—Retroperitoneal sarcomata are noted for their fixity to the surrounding structures, and in this position generally arise from the connective tissues lateral to the spinal column behind the posterior parietal peritoneum. Their removal is difficult, often accompanied by considerable hemorrhage and shock to the patient. Under general inhalation anesthesia undue interference from the numerous surrounding organs and intestines is experienced. Perhaps it will be well in the future to consider spinal anesthesia as a more ideal anesthetic. Unquestionably the latter offers better relaxation and exposure with minimum trauma and resultant lessened shock. Too, the physiologic effects of the anesthetic in blocking the afferent paths to the central nervous system plays no little part in lessening shock as experienced in this case.

Case II.—History—W. D. C. male sixty-one years of age was unaware that a large tumor was present in the right lower quadrant of the abdomen until found by a general practitioner in the course of a general physical examination.

Operation—Through a lower right rectus incision a retroperitoneal tumor was found in the right iliac fossa pushing the cecum to the midline.

The posterior parietal peritoneum was incised and a lobulated fatty tumor removed. A large tongue-like protrusion extended through the dilated femoral ring for a distance of 1.5 inches. The entire mass was encapsulated and removed *en toto*.

Pathologic Examination—Encapsulated lobulated lipoma measuring 8 x 5 x 5.5 inches. On section was of firm even consistency with no areas of degeneration or malignancy. Postoperative convalescence was uneventful and recovery rapid.

Discussion—This case presents many interesting features. First, the site of origin was in the femoral canal of the thigh and gradually expanding forced itself upward into the retroperitoneal space of the abdominal cavity. On examination no pressure effects on the circulation were noted in the right leg and no subjective symptoms were present. Second, retroperitoneal tumors frequently go unnoticed by the patient until they have attained a considerable size. Unless mechanically obstructing some organ there are no especial symptoms to warrant their presence other than those occurring from pressure. In the upright position posterior tumors, even though quite large, most often go unnoticed, and their presence is very frequently discovered by accident. Third, pure lipomata are not so frequently encountered retroperitoneally as usually supposed. Many reported as lipomata have often recurred, showing evidences of sarcomatous or myxomatous tissue changes, even after careful histologic examination of the primary tumor. In consideration of this tendency to recurrence the surgeon must give a guarded opinion as to the prognosis and institute treatment similar to that in other malignant neoplasms. This patient died two years following operation with arteriosclerotic heart disease with congestive failure. An autopsy was obtained and no evidence of recurrence of mass in retroperitoneal position or evidences of metastasis, especially in the lung or mediastinum, were found.

Case III—History—M. M. aged forty-seven years female. Stated that five months ago she first noticed the beginning of another mass in right side of abdomen. Although she had noticed this mass was growing rapidly there was no pain. The only complaints were fullness after eating and increasing constipation with gas. The general health was good and there was no loss of weight. Exactly three years previously she accidentally found

a tumor in the right abdomen which was diagnosed as right ovarian cyst. At operation a large firm retroperitoneal tumor mass was found in the right abdomen. On removing the tumor the right ureter which passed over its anterior surface was severed and was immediately sutured by end-to-end anastomosis. Histologically the tumor was reported as myxosarcoma.

Physical Examination—The patient was short and very well nourished with a large rounded fatty abdomen. On palpation a large irregular firm mass was felt almost throughout the right middle and lower abdomen and extending into the right flank where it seemed to be fixed. There was considerable distention but no areas of tenderness.

Laboratory Examination—The chest and pelvis on roentgenological examination showed no evidences of metastasis. The urine showed albumin and sugar one plus white blood cells red blood cells hyaline fatty and gran-



ular casts. The blood picture was entirely normal except white blood count
 12,000 with 10% eosinophilic leukocytes.

tumor and was large flattened and irregular in shape. Diagnosis Myxolipoma. Except for some bloody discharge from the kidney wound post operatively convalescence was without event and on the fourteenth day was allowed home in good condition and with no complaints. Three weeks following return to home noticed that abdomen was distended more than normally. Constipation was again more pronounced and together with the distention experienced considerable abdominal distress until two months following the second operation abdomen became alarmingly distended and enemata produced but little results. On entering the hospital again all efforts to move the bowels were futile. Clinically all findings simulated an



Fig. 316 Case III.—Showing specimen in Fig. 315 after opening anterior cecal wall. The tumor mass fills the entire cecum. The cut surface shows the distal end hemorrhagic and necrotic. At A tumor mechanically obstructed ascending colon. Neck of hypodermic needle is in ileocecal opening.

intestinal obstruction. The abdomen was enormously distended. On palpation a vague irregular mass the size of a grapefruit could be palpated in the region of the cecum. There was considerable distress throughout the abdomen, persistent vomiting, and the general condition indicated a marked toxemia. Operation was advised and attempted but before the abdomen could be opened the patient expired.

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Laboratory Examination—The chest and pelvis on roentgenological examination showed no evidences of metastasis. The urine showed albumin and sugar one plus, white blood cells, red blood cells, hyaline, fatty and gran-



Fig. 315 Case III—Specimen removed at necropsy showing (A) ascending colon of normal size (B) tumor firmly attached to ascending colon and distended cecum (C) normal ileum at ileocecal junction. Cecum was considerably more distended than shown.

ular casts. The blood picture was entirely normal except white blood count 11,400, 83 per cent polymorphonuclear leukocytes.

Clinical Diagnosis—Recurrent retroperitoneal myxosarcoma.

Operation—In view of the findings reported at the first operation and for the fixity of the present tumor in the right flank, an oblique extraperitoneal right kidney incision was made. On approaching the kidney region a large irregular mass was encountered of a lipomatous nature but pale yellow in color and friable. Piecemeal all evidences of this very adherent tumor were apparently removed and the wound packed with 2 inch gauze to arrest a moderate amount of hemorrhage. The kidney was pushed upward by the

of giving a most guarded prognosis in tumors of a myxomatous nature, either benign or malignant. The avenue of approach in removal of large retroperitoneal tumors in the region of the kidney is debatable and certainly should be the surgeon's choice.

Case IV.—Master W. M., aged twenty-two months. Referred by Dr. W. W. Russell.

History.—When first seen was brought in by his mother who stated that for the past two months the baby was seemingly failing; the appetite was very poor and he was more irritable than usual. About one month ago first noticed the abdomen to be rather large, and since this time it appeared as though the abdomen was rapidly distending; but no mention was made of a tumor in the abdomen.



Fig. 317. Case IV.—Showing unusual shaped kidney tumor removed at operation. Note the complete capsule. The mass on right of isthmus extended upward beneath the right diaphragm.

Examination.—The abdomen was symmetrical, large and dome shaped. A large firm mass, smooth in outline, was palpated the size of a large grapefruit and almost completely filling the entire right side of the abdomen and seemingly attached to the right flank. The general body nourishment was good, but the skin and mucous surfaces were anemic. The thorax was carefully examined and no evidence of pathology noted.

The colon was displaced toward the midline. A urine specimen could not be obtained.

Clinical Diagnosis.—(1) Retroperitoneal tumor, (2) kidney tumor.

Operation.—Under ether anesthesia a long right paramedian incision

Necropsy Findings—On opening the peritoneal cavity the coils of the ileum were adherent by firm adhesions to the anterior parietal peritoneum of the entire right abdomen. The entire ileum was very distended with gas but with no evidence of obstruction throughout. On inspection the cecum was distended five or six times its normal size. A firm elongated mass was found attached to the cecum and lower ascending colon for a distance of 8 inches (Fig 315). On section this mass had invaginated into the cecum from an extraperitoneal position resulting in a most nearly complete mechanical obstruction of the ascending colon and cecum from without. The lower end of the tumor extending in the cecum was hemorrhagic and necrotic. On section the mass was of solid growth and a pale yellow lipomatous color not differing from the tissue removed at the second operation. The cecal walls were very thin and the ilocecal opening was not obstructed. A small separate retroperitoneal mass the size of an egg was removed from the former operative field in the region of the kidney. The right kidney was found to be hydronephrotic. Histologically examination of the extracecal tumor proved the same diagnosis as that of the first operation namely myxosarcoma.

Discussion—This case is interesting for it presents many features to be mentioned, which are common to its type. Retroperitoneal tumors of a myxomatous nature arise from aberrant embryonal connective tissue, very commonly found in the region of the kidney hilus. At the first operation after numerous sections, only an occasional area was found suggestive of a myxosarcoma. Most of the tumor showing a myxomatous structure. The recurrence of a growth in the same region as evidenced by the second operation proves that most of the retroperitoneal myxomata should be classed as malignant. Although no evidence of a sarcomatous nature was found on examination of the tissue after the second operation this frequently occurs and is generally due to insufficient tissue section examinations of the entire tumor. The finding of an extracecal myxosarcoma at autopsy shows the difficulty in completely extirpating these tumors, and their tendency to infiltrate the surrounding tissues results in the persistence of widely spread areas of malignant cells. The symptoms produced by retroperitoneal myxosarcoma are usually those due only to pressure. Here pressure of the recurrent tumor resulted in an almost complete obstruction of the colon at the cecum and ultimately in death. Other more usual evidences of pressure symptoms are kidney atrophy and ureteral obstruction. Again we are impressed with the thought

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Laboratory Examinations.—The blood showed red blood cells 3,890,000; whites 17,600 with 53 per cent polymorphonuclears and 40 per cent lymphocytes and a slight polychromatophilia. On a flat x-ray plate of the abdomen the colon was displaced toward the midline. A urine specimen could not be obtained.

Clinical Diagnosis.—(1) Retroperitoneal tumor. (2) kidney tumor.

Operation.—Under ether anesthesia a long right paramedian incision on

Necropsy Findings—On opening the peritoneal cavity the coils of the ileum were adherent by firm adhesions to the anterior parietal peritoneum of the entire right abdomen. The entire ileum was very distended with gas but with no evidence of obstruction throughout. On inspection the cecum was distended five or six times its normal size.

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Discussion—Tumors of the kidney region in children under five years of age are not infrequent but their diagnosis before operation is more a matter of opinion or experience. Most frequently an embryonal type of tumor is found including the so called sarcoma and mixed tumor of Wilms. Much confusion still exists in the histologic diagnosis of kidney tumors in infants and even here it is extremely difficult to absolutely rule out the possibility of a Wilms tumor. However adenocarcinomata are occasionally seen but very infrequently. At operation the kidney tumor was found to be entirely encapsulated and the outline of the tumor shown with a small amount of kidney tissue between the two tumor masses is most unusual. In contrast to other types of malignant kidney tumors in infants an adenocarcinoma of renal origin rarely metastasizes. Here the encapsulated kidney tumor was completely removed and in contrast to hypernephroma and embryonal tumors (sarcoma) we do not expect it to recur elsewhere. The avenue of approach in removal of large retroperitoneal tumors of the kidney in either the infant or adult is debatable and certainly should be considered the surgeon's choice. Four months following operation when last seen the weight of the patient had increased to normal. All the objective complaints were no longer observed. The color had practically returned to normal and on examination of the abdomen there was no distention or palpable masses.

Summary—Even considering that 4 cases are too few of a series to draw conclusions from still many features common to all retroperitoneal tumors occur in the above cases and warrant their final summary and deductions.

Retroperitoneal tumors most frequently attain a large size before being noticed by the patient and frequently so by accident.

The symptoms are mostly pressure symptoms affecting particularly the gastro intestinal or genito urinary systems.

The surgeon should respect his views and opinion in retroperitoneal lipomata and myxomata particularly in regard to the prognosis considering that the general opinion points to these growths as being malignant and for the fact that *recurrence is the rule*.

exposed a grapefruit sized tumor mass of the right kidney region in the retroperitoneal position. The posterior parietal peritoneum was incised over the tumor mass. On bringing the mass forward from its retroperitoneal position it was found that the mass was composed of two enlargements connected by a small isthmus of tissue and encapsulated throughout. The upper enlargement extended deep and posteriorly under the right lobe of the liver. The mass was found to be the kidney, and nephrectomy completed without difficulty. An appendectomy was done and the abdomen closed without drainage. The patient was returned to room in good condition. On the eighth postoperative day patient was allowed home and subsequently in two weeks allowed the usual privileges.

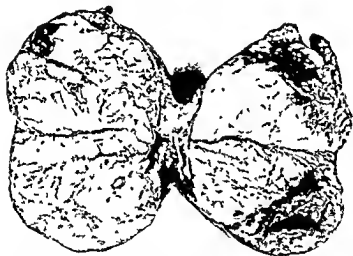


Fig. 318 Case IV.—Kidney tumor in Fig. 317 sectioned. Isthmus of tumor remnant of kidney tissue showing pelvis of ureter attached. Note necrotic and hemorrhagic areas in mass on right and thin capsule.

Examination.—The kidney mass was of dumbbell shape 205 mm in length 95 mm wide and 75 mm thick. A narrow isthmus 45 mm wide and 30 mm thick made up the central part of the dumbbell. On section the isthmus or constricted part was found to be composed of kidney tissue to which the pelvic ureter was attached. The two dumbbell balls were composed of soft friable nearly white tumors with a few hemorrhagic and gangrenous areas. On histologic examination sections showed many nests of epithelial cells some arranged in the form of acini some in tubules and still others arranged in the form of irregular masses. Mitosis was fairly numerous.

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The surgeon should respect his views and opinion in retroperitoneal lipomata and myxomata particularly in regard to the prognosis considering that the general opinion points to these growths as being malignant and for the fact that recurrence is the rule.

Diagnosis of kidney tumors and retroperitoneal tumors arising in the hilus of the kidney is often difficult and impossible before operation

Large retroperitoneal lipomata myxomata and particularly sarcomata, are most frequently firmly fixed and their removal should be viewed with no little concern

Adenocarcinomata in children under five are infrequent and they rarely metastasize as in adults

CLINIC OF DR FOSTER K COLLINS

HOLLYWOOD HOSPITAL HOLLYWOOD CALIFORNIA

RESECTION OF COLON

SOME form of drainage is usually advisable before resecting any portion of obstructed colon. In nearly all of my recent resections of any portion of the transverse or descending colon I have done a cecostomy as the first stage. This not only prepares the patient by permitting the acute symptoms to subside but acts as a vent for gases preventing distention and a possible blow-out at the suture line after resection. A cecostomy also has the advantage of being well to the right leaving a clean uncontaminated left abdominal field for a safe radical resection in usually about ten days. If the ascending colon is to be resected an ileocolostomy as a first stage provides the drainage.

In opening an abdomen for suspected cancer beyond the ascending colon a left outer rectus incision will permit inspection and exploration to determine the location and involvement. If it is a case for resection and the involved portion can safely be replaced in the abdomen I then insert my hand over to the right lower abdomen and determine where a knuckle of cecum can best be made protrude through an incision furthest to the right above the iliac crest. The incision through the abdominal wall is no longer than the knuckle of cecum requires for an ample protrusion and opening. Absorbable sutures in the outer coats of the cecum, peritoneum and fascia secure the knuckle. No sutures are placed in the skin and there is no later infection. If the distention is acute and symptoms urgent a drainage tube can be at once purse stringed into the cecum as soon as the left rectus incision has been closed and protected by vaseline gauze. The left abdominal wall can be thus left free from contamina

tion for the later resection Through a large drainage tube in the cecum the colon is gradually washed out with saline and there is no contamination of the cecostomy dressing for three or four days When the tube loosens an ample opening remains to drain the entire colon quite satisfactorily with irrigation This cecostomy opening, in my experience, either closes of its own accord or can be closed with a few stitches, when it is no longer required, without entering the abdomen If the cancerous mass, because of perforation or other reason, cannot be replaced temporarily with safety, a Mikulicz form of resection is considered

In a resection for carcinoma the all important points are Removal of involved glands with the growth, prevention of impaired circulation at the suture line to avoid a blow-out from necrosis, and provision to prevent distention while healing

I usually, after resection do an end to end anastomosis by my aseptic technic published in the *Annals of Surgery*, of December, 1922, but safeguard this suture line from a blow-out by invaginating it, if possible into the gut below for an inch or so, suturing the gut wall from below up over the suture line and cover this line with an omental graft A tube is inserted through the anal canal, and guided by the hand in the abdomen passed up beyond the anastomosis several inches With both the tube and the cecostomy functioning there is no dangerous distention and rarely even a temporary fecal fistula at the point of resection Pelvic drainage may be employed

The average hospital stay is from three to four weeks from the time the patient first enters

Case Report—The following case is somewhat typical of a series of resections for carcinoma of the colon On June 16 1926 Mr G M age sixty nine years presented himself with the following history For the past two

the color of the gut was good throughout. A cecostomy was performed. Vaseline gauze was placed around and over the knuckle and the incision of the left side then closed in the usual manner.

The following morning with a cautery an opening was made in the protruding knuckle of cecum and a half inch drainage tube inserted this being held in place by purse string sutures thus preventing all leakage. The nurse was given instructions to inject small amounts of normal saline solution through the drainage tube every hour to establish free drainage into a bed side receptacle. The toxemia and distention rapidly subsided and there was an uneventful recovery from this procedure.

On June 26 1926 patient was again taken to the operating room the incision on the left side was reopened and the cancer mass resected by my aseptic technic and there was from this operation an uneventful recovery.

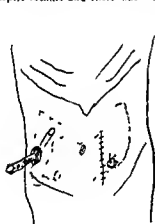


Fig 319—First stage. Exploratory cecal drainage $\frac{1}{2}$ inch tube.

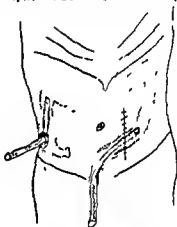


Fig 320—Second stage. Carcinoma resected cecal drainage and tube up beyond resection.

except for a small amount of fecal drainage from the lower end of the left abdominal incision that ceased on the fifth day. The bowels functioned normally on the second postoperative day and the following week in the patient's room and without an anesthetic the cecostomy was closed by a row of infolding sutures. The patient reported from time to time that he had no symptoms and enjoyed better health than he has had since he was in his teens. He took no precautions regarding his diet or habits.

On June 17 1930 this patient again presented himself his abdomen

was up to under a local anesthetic without opening the abdomen. A large amount of colon content and gas was immediately discharged and the

tion for the later resection. Through a large drainage tube in the cecum the colon is gradually washed out with saline and there is no contamination of the cecostomy dressing for three or four days. When the tube loosens an ample opening remains to drain the entire colon quite satisfactorily with irrigation. This cecostomy opening in my experience either closes of its own accord or can be closed with a few stitches when it is no longer required without entering the abdomen. If the cancerous mass because of perforation or other reason cannot be replaced temporarily with safety, a Mikulicz form of resection is considered.

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CLINIC OF DR. J. EARL ELSE

UNIVERSITY OF OREGON MEDICAL SCHOOL

NEGLECTED CHOLECYSTITIS

With all that has been written upon the subject of cholecystitis it would seem unnecessary to write more were it not for the fact that almost daily we are coming in contact with patients in whom cholecystitis has persisted so long that some of the numerous complications have developed. The pathologists report that approximately 5 per cent of all cancer is found in the gallbladder and that cancer of the gallbladder is not common except in those individuals having gallstones. Only one conclusion can be drawn and that is that the patients should have been operated upon before cancer developed.

The prevention of cancer of the gallbladder should be a sufficient indication for operation in all patients known to have gallstones. There are, however, other complications occurring much more frequently than cancer of the gallbladder which should make early operation in known chronic gallbladder disease more urgent than it is generally regarded in the nonpainful variety by the medical profession in general. The citing of the case of a patient operated upon recently will serve as an indication of some of the complications that develop rather insidiously and yet may prove quite serious.

The patient was a woman seventy-three years of age giving a history of having had fairly good health except for the symptoms due to her gallbladder disease. She first became conscious of the presence of something abnormal in the abdomen about nine years ago. The symptoms at first were indefinite and manifested mainly as digestive disturbances. Later she developed biliary colic coming on at rather frequent intervals. For the previous six months before I saw her the pains were quite frequent, very severe, and had to be relieved by morphine. The patient said her physicians had thought that because of her age an operation was distinctly contraindicated. At the

following day a prune seed passed through the cecostomy opening. The patient left the hospital the same day entirely relieved. The fecal fistula closed of its own accord and the patient has been free from symptoms since.

This last episode gives occasion to add another word in the argument in favor of the preliminary cecostomy in cases to be resected—in this case acting as an easy safety valve when the seed lodged at the somewhat constricted site of the former resection.

CLINIC OF DR J EARL ELSL

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examination I found a fairly well preserved woman for her age but showing the effect of recent illness. She was not able to eat well because of fear of an attack of pain. There were many foods which either would cause gastric disturbances or which she thought might produce them. The physical examination was practically negative except for the marked tenderness over the gallbladder and some cardiac enlargement. The Graham Cole was positive. The stomach showed nothing abnormal either by x ray or chemical examination. The stools were approximately normal. No jaundice was present. A few hours after the patient was last seen at the office and an operation advised and refused there came an emergency call to go to the hotel. The patient was found to be having severe pain in the upper right quadrant of the abdomen. She had vomited and the heart was fibrillating. Morphine was administered and the patient sent to the hospital with an order to give one sixth gram of pantopon with any evidence of the return of pain. At first the patient had no desire to eat and regurgitated some of her food. Liquids were forced by giving them per orum, per rectum, subcutaneously and intravenously. The heart stopped fibrillating shortly after the patient arrived at the hospital and the electrocardiogram taken two days later was practically normal. The patient was kept at the hospital for two weeks and then operated upon. At the operation the gallbladder was found to have a markedly thickened wall. At the distal end was a small elbow deformity with complete occlusion which contained several gallstones covered with

This patient showed four of the common complications occurring with gallbladder disease: (1) Inflammation of the liver substance, (2) chronic pancreatitis, (3) dilatation of the common duct, and (4) myocardial changes.

The cardiac lesion was manifest in some hypertrophy and

compensatory dilatation because of nonfunction of the gall bladder. In this patient probably both factors participated as one rarely sees such a marked dilatation of the common duct without some obstruction and yet the probe could be passed through the papilla. There probably was some interference at this point due to the enlargement at the head of the pancreas.

I have been very much interested for years in the relationship of the gallbladder and liver infections. In 1909 I reported some experimental work showing that organisms injected either into the ear vein of a rabbit or into the portal vein reached the gallbladder through the cystic artery and not through the bile or by direct extension from the liver. Recently we have been going over this work again and have found that when we inject an inert substance into the retro gallbladder space that it collects on the border of the liver and is readily carried into the liver by the lymphatics. We have further found when we inject active organisms into the retro gallbladder space they penetrate the liver much more rapidly than the inert substance and that when we inject it into the gallbladder and ligate the cystic duct so that it cannot rapidly drain out, it extends into the liver equally as rapidly as when we inject the organisms into the retro gallbladder space. We found further that when we dissect the liver free from the gallbladder so as to break any lymphatic connections that may exist between the lymphatics of the gallbladder and the lymphatics of the liver and insert the great omentum between the gallbladder and liver so as to completely separate them the organisms penetrate into the liver practically the same as when the gallbladder was not separated from the liver. Infection goes through the gallbladder into the great omentum through the great omentum to the surface of the liver where the lymphatics carry it readily into the liver substance. The lymphatic anastomosis between the gallbladder lymphatics and the liver lymphatics will readily carry the infection both ways as was shown by injecting organisms 2 cm. from the gallbladder in the liver substance. While the inflammation of the gallbladder is not nearly as pronounced when organisms were injected into the liver substance as when they were injected into

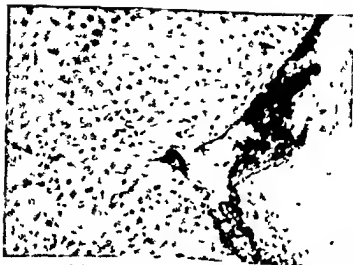


Fig 321—Inda ink which was injected into the retro gallbladder space has accumulated on the liver surface and can be seen extending in the lymphatics down into the liver substance



Fig 322—Showing the inda ink in the interlobular spaces

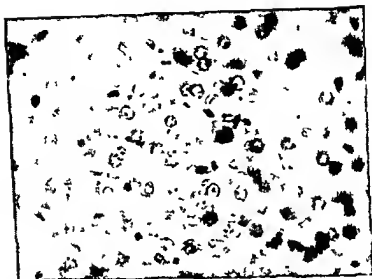


Fig 323 —Showing india ink between the liver cells

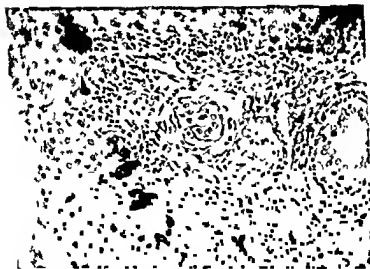


Fig 324 —The india ink has been carried into the liver substance by the lymphatics. Interlobular deposits are seen with minute particles between the liver cells

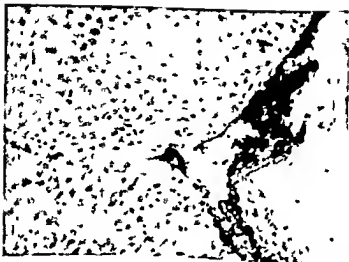


Fig. 321.—Ind. ink which was injected into the retro gallbladder space has accumulated on the liver surface and can be seen extending in the lymphatic space down into the liver substance.



Fig. 322.—Showing the distribution of ink in the interlobular spaces.

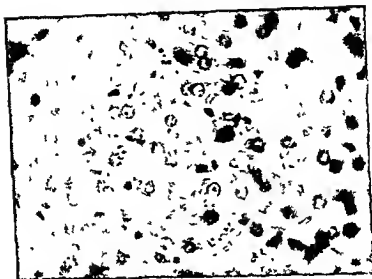


Fig 323 —Showing ind a ink between the liver cells



Fig 324 —The india ink has been carried into the liver substance by the lymphatics. Interlobular deposits are seen with minute particles between the liver cells



Fig. 37b — The gallbladder was dissected free from the liver and an active culture of *Bacillus pyocyaneus* was injected into gallbladder and the duct ligated. The illustration shows the gallbladder adherent to the liver with extension of infection into the liver substance.



the gallbladder, yet there was a very definite cholecystitis to be found in the gallbladder as a result of the extension of the organisms from where they were injected into the liver substance, to the gallbladder.

As a result of these experiments we came to the conclusion that infection can travel quite readily either from the gallbladder into the liver substance or from the liver substance into the gall

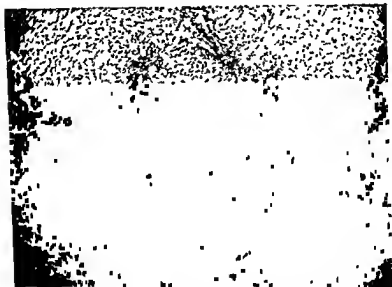


Fig. 327 —A culture of *Bacillus pyocyaneus* was injected into the gall bladder. The illustration shows round cell infiltration and cloudy swelling of the liver cells due to the infection having extended into the liver.

bladder and that we probably rarely have either an active infection of the gallbladder or an active infection in the liver in the immediate vicinity of the gallbladder without the transmission of the organism through the lymphatics in the first case from the liver to the gallbladder and in the second case from the gallbladder to the liver. It has been shown experimentally by myself first in October, 1909, Chirolanza in December, 1909, and since by Karl Meyers and his associates, and



Fig. 375 —The gallbladder was dissected free from the liver and an active culture of *Bacillus pyocyaneus* was injected into gallbladder and the duct ligated. The illustration shows the gallbladder adherent to the liver with extension of infection into the liver substance.



the liver substance

At operation I opened the common duct and after exploring it carefully inserted a rubber tube for drainage. She is still draining bile profusely. With the marked dilatation of the common duct that she had we do not know that it will contract down to normal size and function properly in the future. It may be that it has lost its ability to contract and as soon as drainage stops if it does the common duct may again dilate and she may again have symptoms because of the enormous dilatation of the common duct. We expect that with drainage the



Fig. 329.—A culture of *Bacillus pyocyaneus* was injected 2 cm. deep in the liver substance in the vicinity of the gallbladder. The illustration shows submucous abscess in the gallbladder wall due to the infection having extended from the liver into the gallbladder.

pancreas will decrease somewhat in size the interference in the lumen of the common duct near the pancreas will be reduced and that the patient will show marked improvement as a result of her operation. It will take time however to tell. We believe that had this patient been operated upon years ago when her gallbladder disease developed in all probability she would not have had the chronic indurative inflammation that involved the

Rosenow that Koch's contention in 1908 that infection of the gallbladder is usually from the blood stream is correct. The experimental work which we have been recently carrying on at the University of Oregon Medical School confirms the painstaking work of Graham that involvement of the liver will occur as a result of prolonged or acute gallbladder infection. The purpose of the experimental work and of this paper is to emphasize this fact. Chronic gallbladder disease cannot be neglected without

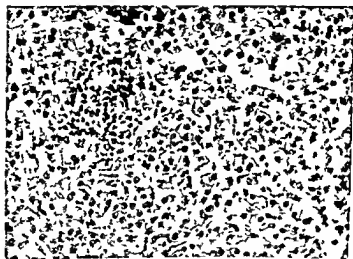


Fig 378—A culture of *Bacillus pyocyaneus* was injected into the gall bladder. The illustration shows round cell infiltration and cloudy swelling of the liver cells due to the infection having extended into the liver.

the patient paying the price of that neglect. The patient referred to was not a good risk case. She had reached the age at which operations are not well withstood. She had developed complications that made the operation hazardous. No one knew that her heart would withstand the operation because it fibrillated during an attack, and yet with the increased frequency and severity of attacks the dangers were greater in not operating than in operating.

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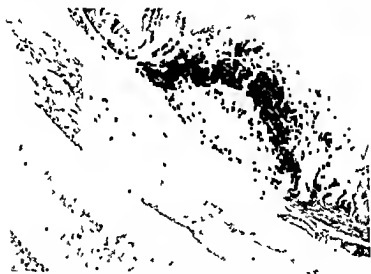


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pancreas will decrease somewhat in size, the interference in the lumen of the common duct near the pancreas will be reduced and that the patient will show marked improvement as a result of her operation. It will take time however to tell. We believe that had this patient been operated upon years ago when her gallbladder disease developed in all probability she would not have had the chronic indurative inflammation that involved the

head of the pancreas the marked dilatation of the common duct, the extensive inflammation of the liver, and the cardiac lesion. The lesson to be drawn from this case which is not rare in the practice of those doing abdominal surgery, is that of earlier operation. We must let no opportunity go by to bring this to the attention of the medical profession and the laity for on the part of both there is a failure to realize the consequences of neglect.

CLINIC OF DR SUMNER EVERINGHAM

HIGHLAND HOSPITAL, OAKLAND, CALIFORNIA

DIVERTICULUM OF THE SIGMOID—TREATMENT

LESIONS of the colon have been receiving more attention during the last decade and in this group diverticulum of the sigmoid has assumed wide recognition. Although pathologists

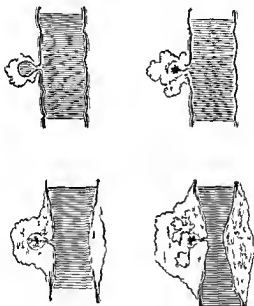


Fig. 330.—Diagrammatic representation of the formation of acquired diverticulum of the sigmoid. The advanced stage indicates the scar tissue formation restricting the lumen and with edema causing obstruction. (After A. W. Fischer.)

have frequently noted diverticula in the laboratory (5 to 7 per cent), formerly this condition was considered a rarity. Routine

head of the pancreas the marked dilatation of the common duct, the extensive inflammation of the liver, and the cardiac lesion. The lesson to be drawn from this case, which is not rare in the practice of those doing abdominal surgery, is that of earlier operation. We must let no opportunity go by to bring this to the attention of the medical profession and the laity, for on the part of both there is a failure to realize the consequences of neglect.

substance mixed with movement that has been ribbon shaped at times while at other periods they were normal. Never any blood. Her weight and general strength have remained the same. Six months and one month ago had febrile reaction with abdominal discomfort. On examination the essential findings were a mass 3 x 6 cm. felt in the left lower quadrant of the abdomen not movable and only slightly tender. Liver and spleen not felt, no apparent ascites. vaginal examination negative. x Ray reported some diverticula but inclined to the diagnosis of carcinoma at the rectosigmoid junction.



Fig. 331—Mrs. M. D. Showing diverticulosis in segment below brim of pelvis closely related to iliac vessels. Obstruction not complete.

Operation. Abdomen was explored and mass 12 cm. in length found at rectosigmoid junction. This involved all the coats of the sigmoid having caused an annular constriction firmly adherent to brim and lateral wall of the true pelvis. Proximal to the pelvic lesion several small pouches were seen on the serosa of sigmoid 2 to 3 mm. in diameter typical diverticula. Because of the technical difficulties the usual left sided colostomy was done. The patient made a satisfactory recovery and has been quite comfortable since her return home.

The end result of advanced changes in diverticulitis of the sigmoid is illustrated in this last case.

F. J., age fifty years, had had an appendectomy six months before by a private physician. Some pelvic peritonitis was apparently encountered since he was drained and had a stormy convalescence. Eighteen hours before his admission in April he was taken with acute agonizing abdominal pain.

a ray examination of the colon in subjects over forty years shows this lesion in approximately 10 per cent of the cases so studied

Because of the relative frequency of this condition may we call your attention to the different indications for treatment in the three cases of diverticulosis here presented

Miss M B age seventy years had been observed as an out patient over a period of seven years When seen originally she complained of nausea and dizziness accompanied by vomiting that had its inception three years previously (1921) and had been termed by her physician as intestinal toxemia Similar periodic attacks occurred from time to time possibly three or four a year and lasting from two to fourteen days She was suspected of gall bladder disease although no jaundice or gallbladder colic chill or localized upper right abdominal pain was observed

Multiple joints showing low grade arthritis followed involving the spine shoulders and neck Constipation had been the rule and she had been addicted to cathartics The physical examination showed little that was unusual except a rather stout woman of stated age with some tenderness over the gallbladder region and colon

substance mixed with movement that has been ribbon shaped at times while at other periods they were normal. Never any blood. Her weight and general strength have remained the same. Six months and one month ago had febrile reaction with abdominal discomfort. On examination the essential findings were a mass 3 x 6 cm. felt in the left lower quadrant of the abdomen not movable and only slightly tender. Liver and spleen not felt, no apparent ascites, vaginal examination negative. x Ray reported some diverticula but inclined to the diagnosis of carcinoma at the rectosigmoid junction.



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F. J., age fifty, private physician, he was drained and his admission in April was taken with acute agonizing abdominal pain.

This came on without known cause he having worked the preceding day the attack apparently not preceded by any dietary indiscretion. The pain was cramplike in character more pronounced in the lower half of the abdomen slightly to left of midline. Six hours after onset he had had no



Fig. 332—Mr. F. J. Nearly complete obstruction with diverticula noted proximal to constricted area.



Fig. 333—Same as Fig. 332 only after interval during which some of inflammatory obstruction has subsided.

bowel movement even though laxatives and an enema had been given. Great distention of abdomen was present with slightly more tenderness to left and below the level of the umbilicus. An exploration was done that presented



Fig. 334—Specimen of constricted bowel removed. Scar tissue almost cartilaginous in character of great thickness.



Fig. 335—Same sigmoid as in Fig. 334—four years after resection of segment of sigmoid obstructed by chronic diverticulitis.

free pus in the general peritoneal cavity intestinal obstruction involving two loops of small intestine that were glued to an inflammatory area in the upper rectum was found. After mopping up the free fluid the intestinal loops were inspected and raw areas covered with Cushing sutures. The wound was closed with a large drain leading into the pelvis. He made a good though a stormy recovery and was discharged to his home on about

the clinical picture was one of obstruction we felt it was not complete and instituted conservative measures viz large abdominal stoops rectal irrigation and atropine by mouth. Fecal return was noted in thirty six hours and a



Fig. 336 — Removal of obstructing mass has caused small diverticula proximal to that segment to diminish or disappear

about a hour after following which a

was protected by passing a rectal tube from anus to a point just above the sutured level before the abdomen was closed. A good recovery was made from the surgery, gas was passed at the end of forty-eight hours and the patient had a spontaneous movement on the third day. Convalescence was uneventful.

After a lapse of four years a barium enema was given this patient and not only is there no constriction at the site of the end to end anastomosis but there is a diminution in the number of diverticula seen formerly proximal to the site of stenosis.

COMMENT

The etiology of diverticulosis is as yet imperfectly understood and like so many conditions probably has more than one factor in its origin. It appears most commonly in middle life or in those in advanced years. Keith and Graser are inclined to accept the view that the pouches occur as a result of a rarefying degeneration in the muscle layer of the colon. Others believe it takes place as a herniation through the aperture of the intramural blood vessels with the resulting spasm of circular layer and slowing of the fecal stream accompanied by infection of the wall. Haines has advanced the interesting theory that diverticula are embryonic vestigial sacculations that have failed to recede or regress.

Constipation has long been considered the most important single factor, yet in large series diverticulosis is more common in men than women by nearly two to one although men are less liable to constipation.

It is quite evident that the prognosis and treatment of diverticulitis depend on how soon the condition is recognized and how advanced the lesion has become. Quite usually all symptoms from early cases and many of the more advanced sacculations can be held in check by conservative measures. This consists of removing all source of sepsis, paying particular attention to oral hygiene, then giving a diet made up mainly of vegetables and fruit of the soft nonresidue variety. Meat may be given once or twice a week. In some hands *Bacillus acidophilus* given with milk sugar has yielded good results in that it changes the intestinal flora. Enemata of normal saline every other day should be given and patient advised to refrain from all straining during defecation.

Operative treatment is required by the individual when advanced lesions invite obstruction local abscess formation or internal fistula with one of the surrounding organs. The broad principal that obstructed bowel admits of but a limited procedure has influenced many to favor multiple stage operation for the relief of this condition. A colostomy may be used to be followed by other attacks when the diverticulitis has in part subsided. If the segment involved is localized and can be dissected out or delivered near surface a Mikulicz multiple stage operation is no doubt the most conservative yet resection with end to-end anastomosis is to the surgeon the more ideal procedure.

PRIMARY ENDOTHELIOMA OF THE PERICARDIUM. REPORT OF A CASE

Clinical History—Mrs M N, white, forty four years, was admitted to the surgical service December 16th complaining of cough, loss of general vigor pain under right scapula and occasional afternoon temperature. Before entrance to the hospital she had had attacks of bronchial asthma for a period of two years accompanied by the usual unproductive cough except for four months when she was staying in a slightly warmer climate. She thinks during one of the exacerbations that she had pneumonia though she never noticed any blood in sputum. There was some urticarial skin disturbance with some of these spells. Considerable dyspnea on exertion was noted the last eighteen months. One year ago an x ray plate had been taken of her chest and a primary carcinoma of the lung reported.



Fig. 337—Globular tumor taking origin from right lateral aspect of mediastinum

On her admission she dates her present illness to three months before when she had a sudden sharp excruciating pain in the right chest just below the breast which lasted two hours intermittently. There was some dyspnea with the attack. She has lost 15 pounds in weight, slightly more trouble with her cough of late and rather severe night sweats during last three weeks.

Physical Examination—A rather thin, pale adult woman of stated age troubled with moderate cough. She has excessive postnasal dripping when she lies down. Oral hygiene good, tonsils atrophic. Lungs, expansion fair with increased fremitus over right side anteriorly. Many coarse râles were

heard over entire right chest posteriorly and at base anteriorly. Scattered rales over entire lower half of left chest posteriorly. Heart normal blood pressure 110/58. Numerous x rays were taken and lungs fluoroscoped after introduction of 1200 cc of air. A well circumscribed tumor mass was



Fig 338—Tumor was quite firm but cut easily and shows cellular nature



Fig 339—Films taken one year before admission. Those taken after introduction of air showed slight space between tumor and anterior wall of chest

seen at about the level of the fourth interspace nearer the anterior chest wall but not attached to it nor to the diaphragm. The mass appeared to pulsate with the heart beat and moved with the mediastinum but was not expansile itself.

Operation—Gas-oxygen anesthesia. A curved incision 15 cm. was made beginning slightly to right of sternum about level of fourth space carried downward and backward. The tissues were divided, breast dissected superiorly, pectoral muscles sectioned. Ten centimeters of the fifth rib was removed subperiosteally lateral to the costochondral junction. The pleura was opened and to gain more room the fourth rib cut without removing any part of the bone. A globular mass 12 cm. in diameter was found attached to the right lateral wall of the pericardium taking origin from a broad base displacing the lung laterally. It was not adherent to the lung, the pleura being remarkably free from adhesions with some atelectasis of the anterior aspect of the lower lobe. The tumor was in part delivered to the surface of the wound the pedicle doubly secured and the encapsulated mass removed. Mattress sutures were taken over the stump to reinforce the ligature. Some circulatory embarrassment was experienced when traction was made on the pericardium but this disappeared after removal of the tumor.

The pleura was closed without drainage, first distending the lung with positive pressure to inflate the part. Superficial structures were closed in the usual manner.

Microscopical section showed an extremely cellular malignant type of cell. The stroma was irregular with rather scant blood supply, the cell morphology resembling that of an endothelioma. A section was forwarded to Dr. James Ewing who concurred in this diagnosis.

Course—The patient made a very good recovery immediately following her surgery. Some dyspnea and temperature developed that seemed to yield to the usual measures but signs of congestion were heard in the left chest that soon gave way to those of a frank pneumonia. A portable film of the chest seven days postoperative showed partial collapse of right lung with haziness in the left. She continued to slip in general strength and expired on the ninth day after operation.

CLINIC OF DR FRED R FAIRCHILD

WOODLAND CLINIC WOODLAND CALIFORNIA

TWO PATIENTS WITH COMPLETE SITUS TRANSVERSUS

A COMPLETE situs transversus is not so infrequent as to deserve special comment. The report of the following case is justified by the surgical conditions which enable us to make complete antemortem observations.

CASE I

On December 5, 1912, Mrs. D., age thirty-four years, sought advice relative to pain and soreness in the right lower abdominal quadrant, stating that she had had repeated similar attacks during the past three preceding years.

Family History—Essentially negative.

Past History—Excellent with no serious or suggested illness except typhoid fever at the age of twenty from which she made an uneventful recovery.

Present Complaint—Three years previously the patient had had an attack of severe dark-brown symptoms of intestinal indigestion. This lasted for a few days. She had had recurrence of the symptoms at intervals of about two or three months. During the year immediately antecedent to our examination the complaint had been of colicky pains in the right lower abdominal quadrant with marked tenderness to pressure and with some elevation of temperature. Also during this time she had observed that the paroxysms were followed by obstinate constipation. Two months before she had consulted the late Dr. William Watt Herr of San Francisco, who made a diagnosis of acute recurring appendicitis plus a chronic cholecystitis. In this diagnosis we concurred and advised operation.

Operation—On December 14th a right rectus incision was made. Upon exploration a tumor about 8 cm. in diameter was found in the redundant portion of the sigmoid. This mass was situated on the right side of the abdomen and was adherent to the anterior abdominal wall. It was not surrounded by adhesions. Macroscopically the tumor presented the characteristics of a carcinoma of the sigmoid. A resection of the bowel was done and a lateral anastomosis was made. Due to the severity of the operation and the apparently obvious condition no extended exploration of the abdominal cavity was done. Our records state that we were unable to palpate the gallbladder.

We considered that the tumor was in a very redundant sigmoid and did not suspect any abnormal congenital condition.

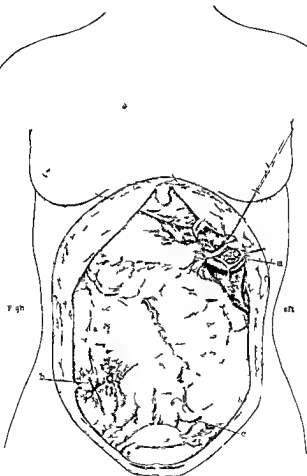


Fig. 340—*a* Gallbladder stones *b* tumor of sigmoid *c* appendix

Examination of the specimen was made by Dr. William Ophuls with the following diagnosis: Inflammatory (?) stenosis of the colon. Dr. Ophuls states in general the character of the lesion was such as to excite suspicion

of malignancy but that he had been unable to find any evidence of cancer in the specimen sent

On September 2, 1914 I was called in consultation to again see this patient. At this time she gave a history of having been entirely relieved of her original complaint but stated that she had had an attack of acute upper left abdominal pain on December 25, 1913. This pain extended through to the left shoulder blade. It was of sudden onset and very severe, and after two hours had a sudden termination. There was no jaundice following the attack. Two weeks later she had had a similar paroxysm and from this time had occasional recurrences of the same symptoms with much gas and sour stomach in the intervals. The two attacks preceding the visit on December 25th were followed by positive icterus. On physical examination she was tender to pressure under the left costal arch.

The symptoms were typical of a gallbladder disease with the position of the gallbladder transposed. This with our previous experience of having operated on a sigmoid tumor and having found the sigmoid in the right iliac fossa finally excited a suspicion that should have existed long before of a situs transversus. x Ray examination demonstrated the fact that all organs were transposed. A diagnosis was made of cholelithiasis with the gallbladder situated in the upper left abdominal quadrant.

Operation—On January 13, 1915 the gallbladder was removed through an upper left rectus incision. It was filled with stones. A complete transposition of the viscus was demonstrated. Exploration of the appendix showed it to be chronically inflamed and situated in the lower left abdominal quadrant. One is chagrined after an experience of this sort at his lack of diagnostic acumen when in retrospect the abnormality would seem to have been so obvious.

Dr. Kerr was subsequently visited and was kind enough to read me his records of the patient made before she consulted us. He will be remembered as a clinician of note on the Pacific Coast and as a man of unusual attainments who gave great attention to detail. His records failed to show any suspicion of the transposition, which at the operation was found to exist. In this we find some consolation for our own apparant delinquency.

In reporting this case (Fig. 340) I am fulfilling a belated promise to the late Dr. William Watt Kerr.

CASE II

Female, age forty-one years

id had

She had had much disturbance from gas and sour eruptions coming shortly after taking food. She had never had an attack of jaundice or an attack of acute abdominal pain.

We considered that the tumor was nearly redundant sigmoid and did not suspect any abnormal congenital condition.

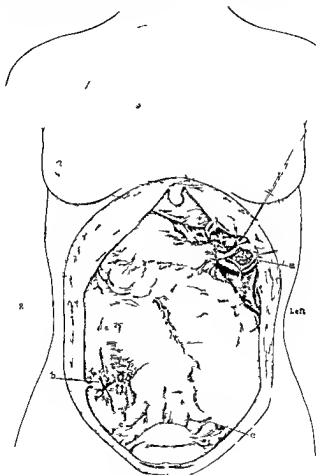


Fig. 340—*a* Gallbladder stones *b* tumor of sigmoid appendix

Examination of the specimen was made by Dr. William Ophuls with the following diagnosis: Inflammatory (?) stenosis of the colon. Dr. Ophuls stated that in general the character of the lesion was such as to excite suspicion

of malignancy but that he had been unable to find any evidence of cancer in the specimen sent

On September 2, 1914 I was called in consultation to again see this patient. At this time she gave a history of having been entirely relieved of her original complaint but stated that she had had an attack of acute upper left abdominal pain on December 25, 1913. This pain extended through to the left shoulder blade. It was of sudden onset and very severe, and after two hours had a sudden termination. There was no jaundice following the attack. Two weeks later she had had a similar paroxysm and from this time had occasional recurrences of the same symptoms with much gas and sour stomach in the intervals. The two attacks preceding the visit on December 20th were followed by positive icterus. On physical examination she was tender to pressure under the left costal arch.

The symptoms were typical of a gallbladder disease with the position of the gallbladder transposed. This with our previous experience of having operated on a sigmoid tumor and having found the sigmoid in the right iliac fossa finally excited a suspicion that should have existed long before of a situs transversus. x Ray examination demonstrated the fact that all organs were transposed. A diagnosis was made of cholelithiasis with the gallbladder situated in the upper left abdominal quadrant.

Operation.—On January 13 1915 the gallbladder was removed through an upper left rectus incision. It was filled with stones. A complete transposition of the viscus was demonstrated. Exploration of the appendix showed it to be chronically inflamed and situated in the lower left abdominal quadrant. One is chagrined after an experience of this sort at his lack of diagnostic acumen when in retrospect the abnormality would seem to have been so obvious.

Dr. Kerr was subsequently visited and was kind enough to read me his records of the patient made before she consulted us. He will be remembered as a clinician of note on the Pacific Coast and as a man of unusual attainments who gave great attention to detail. His records failed to show any suspicion of the transposition, which at the operation was found to exist. In this we find some consolation for our own apparent delinquency.

In reporting this case (Fig. 340) I am fulfilling a belated promise to the late Dr. William Watt Kerr.

CASE II

Female age forty one years

ad. had

She had had much disturbance from gas and sour eruptions coming shortly after taking food. She had never had an attack of jaundice or an attack of acute abdominal pain.

Present Complaint—Patient dated the beginning of the trouble for which she was seeking advice from ten years previously at which time she had had

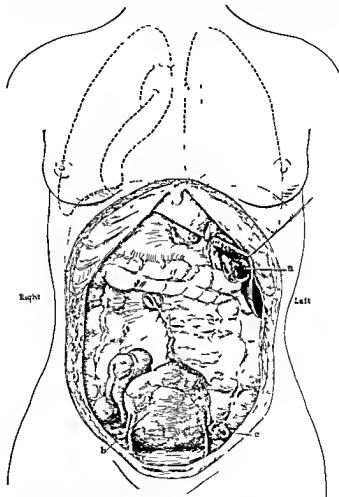


Fig 341—*a*, Gallbladder stones *b* uterus with multiple fibroids *c* appendix

an attack of pain and soreness in her right lower abdominal quadrant. The onset of this attack was immediately before her menstrual period. Following this at intervals of two or three months she had had similar discomfort. On

physical examination it was noted that she had a dextrocardia. There were no other suggestive findings except in relation to her pelvis.

Bimanual examination showed that the uterus was the site of numerous rather large fibroids.

Operation was advised and advice accepted. That portion of the operative record pertinent to this report is as follows: "Search was made for the appendix, disclosing the fact that it was situated in the left lower abdominal quadrant and showed evidence of much chronic and some recent acute inflammation.

The gallbladder filled with stones was palpated in the left upper abdominal quadrant. The sigmoid approached the pelvis from the right. A panhysterectomy and an appendectomy were done. The gallbladder was removed at a subsequent operation."

Postoperative x-ray examination demonstrated a complete situs transversus (Fig. 341).

Present Complaint—Patient dated the beginning of the trouble for which she was seeking advice from ten years previously at which time she had had

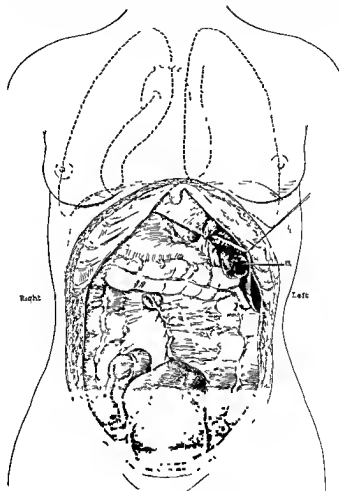


Fig 341 —*a*, Gallbladder stones *b* uterus with multiple fibroids *c* appendix

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CONGENITAL (?) ANEURYSM OF THE INTERNAL CAROTID ARTERY

THE rarity of an aneurysm of the internal carotid artery in a child plus complications confusing the diagnosis would seem to justify a report of a case recently seen.

W. A. male age three years was admitted to the Woodland Clinic on 3/2/31 with provisional diagnosis of acute cervical adenitis left.

Family History—Father, mother and one brother alive and well. No suggestive familial diseases.

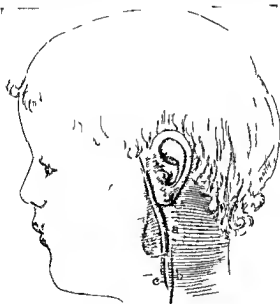
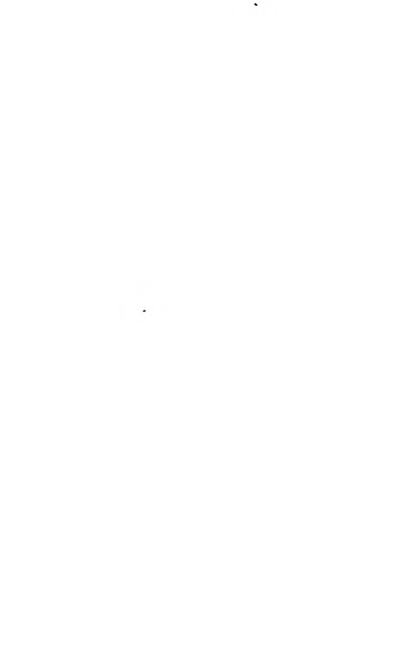


Fig. 342—*a* Aneurysm of internal carotid *b* internal carotid *c* external carotid

Past History—Normal sturdy child who except for the present trouble and conditions related to it had had no previous illnesses except mumps and whooping cough from which he made a good recovery.

On 10/22/29 was admitted to the clinic with a diagnosis of tonsillitis acute complicated by cervical lymphadenitis. The child at this time was



temperature of 104 F with an acute otitis media left. Paracentesis was again done with immediate relief of pain. Two days later discrete cervical glands were noted on the left. The child remained very ill with daily temperature up to 104 F and a pulse of 150. There was intermittent discharge of blood stained mucus from the nostrils. The white count was 34 800 with 91 per cent polymorphonuclears. The urine was negative.

The following day the evidence of infection being positive and notwithstanding the question of a probable aneurysm a small incision was made at the most prominent part of the tumor which was posterior to the sternocleidomastoid at the junction of its upper and middle thirds and by very careful blunt dissection an abscess was opened at a depth of about 1 inch. A culture

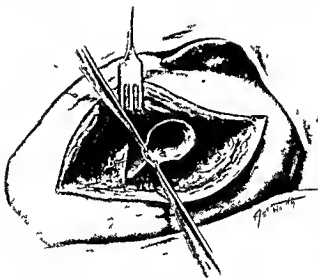


Fig 344 —a Aneurysm of internal carotid b external carotid

of the pus which was small in amount resulted in recovery of *Streptococcus beta* (hemolytic). Following the pus there was a discharge of about $\frac{1}{4}$ ounce of old black blood clot. There was no unusual bleeding during the procedure but about fifteen minutes later there was a sudden and alarming hemorrhage of bright arterial blood which was easily controlled by packing the cavity with gauze. Transfusion of 350 cc. of citrated blood was done and the usual supportive treatment inaugurated.

On 3/6/31 blood count showed 43 000 whites with 81 per cent polys, 9 per cent small lymphs, 3 per cent large monos, 4 per cent transitionals and 3 per cent eosinophils.

The child's condition did not improve and on the afternoon of 3/6/31

very ill being quite anemic (hemoglobin 42 per cent) apparently from repeated nasal hemorrhages. Culture from the throat showed *Streptococcus beta* (hemolytic). Blood cultures were positive for *Streptococcus beta* (hemolytic).

The tonsils remained swollen and infected for some days. In view of the ultimate diagnosis the note made on 10/24/29 "That the left tonsil seems to protrude into the throat more than the right" is significant.

Treatment during hospitalization in addition to the usual local measures was by radiotherapy to the enlarged glands with two transfusions of 250 cc of citrated blood. He was dismissed in fair condition on 11/16/29 with negative blood culture and a hemoglobin of 62 per cent.

On February 8, 1930 the child was admitted to the hospital in good condition for tonsillectomy. The tonsils were removed by Dr. C. H. Fairchild, the following significant note appearing in the description of the operation: "Routine enucleation of the tonsils—no ligature. A large fusiform pulsating mass was felt behind the left posterior pillar and extended up into nasopharynx (Fig. 313)."



Fig. 313—*a* Uvula *b* rupture of aneurysm

temperature of 104 F with an acute otitis media left. Paracentesis was again done with immediate relief of pain. Two days later discrete cervical glands were noted on the left. The child remained very ill with daily temperature up to 104 F and a pulse of 150. There was intermittent discharge of blood stained mucus from the nostrils. The white count was 34,800 with 91 per cent polymorphonuclears. The urine was negative.

The following day the evidence of infection being positive and notwithstanding the question of a probable aneurysm a small incision was made at the most prominent part of the tumor which was posterior to the sternocleidomastoid at the junction of its upper and middle thirds and by very careful blunt dissection an abscess was opened at a depth of about 1 inch. A culture

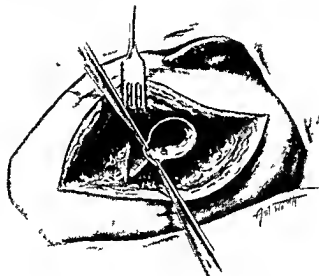


Fig. 344—*a*. Aneurysm of internal carotid. *b*. external carotid.

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The child's condition did not improve and on the afternoon of 3/6/31

acute obstruction to respiration made a tracheotomy necessary. There was immediate relief of the respiratory difficulty, but the general condition became increasingly bad and on 3/9/31 it was determined that ligation of the artery below the aneurysm was mandatory notwithstanding the immediate hazard attending the procedure.

Operation.—Usual incision was made to expose the common carotid at the bifurcation of the external and internal branches. During the procedure the aneurysmal sac ruptured with great loss of blood. The hemorrhage was controlled by packing and the operation was temporarily suspended to permit the transfusion of 400 cc. of citrated blood. Immediately following this and while preparing to proceed with the ligation the aneurysm again ruptured this time into the posterior left pharyngeal area, death resulting in a few minutes from complete exsanguination (Fig. 343).

The postmortem examination demonstrated an aneurysm of the internal carotid artery, fusiform in contour and approximately 4 x 10 cm. in extent (Fig. 344).

Comment.—The problem associated with this case, while it would have been great if the aneurysm had been uncomplicated by contiguous infection, was made increasingly difficult by reason of the association of the infection in the cervical glands on this side of the neck. The general septicemia with an obstructing local condition due to infiltration and pressure caused by the aneurysm placed the child's life in such jeopardy that heroic

CLINIC OF DRS EDGAR L GILCREEST AND THOMAS F MULLEN

ST MARY'S HOSPITAL SAN FRANCISCO CALIFORNIA

THE EPIDURAL AND TRANSSACRAL INJECTION OF ALCOHOL FOR THE RELIEF OF PAIN

THE relief of pain in the terminal stage of inoperable malignant disease is often the most important therapeutic problem presented in this unfortunate and hopeless condition. We have at our command three agencies for its alleviation. First analgesic drugs of these the most important are the derivatives of opium of which morphine is the most efficacious and to which recourse is finally had. Even this potent pain relieving drug fails us ultimately in many instances in that a certain degree of tolerance is developed and doses of increasing size have to be given to obtain relief. Furthermore there is a certain group of individuals who have an idiosyncrasy to morphine and in whom the disagreeable symptoms caused by it only add to the discomfort. These persons are made more wakeful and apprehensive by this narcotic or they become tormented by an intense pruritis which is accompanied by marked erythema and urticarial manifestations. In others the primary influence of the drug is followed by great nausea and frequently severe vomiting. Occasionally the mental depression is simply overwhelming and the very fact of having to drag out existence is a curse. In a small number excitement with combativeness instead of sedation follows the exhibition of morphine. A further disagreeable effect of the large doses of the drug sometimes necessary is the stupification caused by it so that the patient and his family are denied the feast of reason and the flow of Soul during the final days of his life. There is as a rule no other drug that need be considered when morphine reaches the

acute obstruction to respiration made a tracheotomy necessary. There was immediate relief of the respiratory difficulty but the general condition became increasingly bad and on 3/9/31 it was determined that ligation of the artery below the aneurysm was mandatory notwithstanding the immediate hazard attending the procedure.

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Comment.—The problem associated with this case, while it would have been great if the aneurysm had been uncomplicated by contiguous infection, was made increasingly difficult by reason of the association of the infection in the cervical glands on this side of the neck. The general septicemia with an obstructing local condition due to infiltration and pressure caused by the aneurysm placed the child's life in such jeopardy that heroic measures had to be adopted to save life. Viewing the situation in retrospect the query naturally comes as to whether the outcome might have been different if the true condition could have been earlier recognized and operative measures limited to a ligation of the internal carotid artery at its base.

The epidural and transsacral injection of alcohol for the relief of pain in inoperable carcinoma of the rectum was used by us before we were aware that it had been advocated separately by Dyas Woodbridge, and by Swetlow. We also learned later that Labat has used it with caution in this manner for some time and noted his suggestion, that in order to prevent paralysis of the sphincters, procaine in 10 per cent alcohol be used, gradually increasing the concentration until motor function is slightly interfered with.

In the patient we have under consideration this morning and in whom we intend to make an epidural injection of 30 per cent alcohol afterward in injecting the sacral nerves through the sacral foramina with the same concentration we have made five similar injections previously with gratifying results. In this man fifty years old we are dealing with an extensive inoperable carcinoma of the rectum of three years duration. The growth has invaded the prostate and the bladder is widespread firmly fixed and the cause of severe continuous pain. Numerous operations have been done incision and drainage of the ischio-rectal fossae for secondary infections the removal of a testicle for suppurative orchitis and finally colostomy for the relief of obstruction as a result of the last procedure we do not have to consider the anal sphincter. We should greatly regret a paralysis of the muscles of the lower extremity however as this man is still able to move about and help himself to a certain degree and complete helplessness would be very demoralizing to him. In this instance morphine has been used to the limit and he is one of those unfortunate persons who is denied the kindest effects of the drug as it invariably causes in him profound depression and combativeness and brings out all of the disagreeable traits of his character.

Our first injection in this patient was made some weeks ago 10 cc of 15 per cent alcohol being injected into the sacral canal and 8 6 5 and 4 cc being injected through the second third fourth and fifth foramina of the sacrum respectively. The relief was unexpectedly gratifying as we feared that the weak solution used might not be very effective. At the second injection we used 30 per cent alcohol placing 30 cc in the sacral canal and the same amounts as formerly through the foramina. In all subsequent injections as we shall today we have used concentration and amounts similar to those used at the second injection. There have been no motor symptoms the vesical sphincter functioning normally and the muscles of the lower extremity showing no effect. Pain has been relieved for several days following each injection and after its return it has not been as severe as formerly. We have made the injections on the average of once a week and we would increase the

limit of its usefulness in the relief of pain. The second agency is surgical, measures such as the physical interruption of the conducting paths, either in the cord the dorsal roots or the trunk of the peripheral nerve itself. These procedures may not be available, either through the refusal of the patient or his family to submit to them, through the absence of competent help or through local conditions which preclude any surgical measure.

There remains the third and final agency, therapeutic block of the conducting paths by means of anesthetic solutions, a temporary measure of short duration at best, or block by means of solutions which cause more permanent interruption through axonal degeneration of the nerves so treated. Alcohol is the most widely adopted of these solutions and for its use, precedent is firmly established as in the treatment of trigeminal neuralgia the pain of amputation neuromata and causalgia. Alcohol destroys nerve tissues by dissolution, coagulating albuminous material, and dissolving lipid substance thus causing a cessation of the conduction of painful sensations. Degeneration may be partial or complete, depending on the strength of solution used and the intimacy of its contact with the nerve. If strong solutions are injected directly into the nerve the degeneration is much greater and the effect more permanent than if the nerve is simply bathed in solutions of weaker concentration. Sicard says that sensory are more susceptible than motor fibers to the

same time completely interrupting sensory impulses whereas injections of 80 per cent strength cause marked motor symptoms and result in severe paralytic phenomena. Cadwalader on the other hand concludes that alcohol affects motor and sensory fibers in exactly the same manner provided the contact is equal

means of alcoholic injections should be used only after much thought and with great caution

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means of alcoholic injections should be used only after much thought and with great caution

- Great sciatic Posterior muscles of thigh adductor magnus
 External popliteal
 Internal popliteal Muscles of the leg and foot
- From second sacral Nerves to the pyramidal s obturator internus
 Inferior gluteal Gluteus maximus
 Great sciatic Biceps semitendinosus
 Internal popliteal Gastrocnemius soleus flexor longus hallucis ext
 ternal muscles of foot
 Internal pudic Muscles of perineum
- From third sacral
 Superior gluteal Gluteus medius and minimus Tensor fasciae femoris
 External popliteal Muscles of anterior region of the leg Peronei
 Internal popliteal Tibialis posterior flexor longus digitorum
- From fourth sacral
 Great sciatic Long head of the biceps
 Internal pudic Muscles of the perineum
 Internal popliteal Gastrocnemius soleus muscles of the sole of the
 foot
 Nerves to the pyramidal s levator ani ischiococcygeus
- From fifth sacral
 Internal pudic Muscles of the perineum
 Nerves to the levator ani ischiococcygeus

For a short distance after piercing the dura the sacral nerves traverse the sacral canal and in this situation they may be directly influenced by solutions placed within the canal. Sensation to the pelvic viscera and to the cutaneous region of the sacrum coccyx and buttocks as well as a considerable area of the posterior surface of the lower extremity comes from this group of nerves.

We think that in certain instances the epidural and transsacral injection of alcohol to relieve pain in or below the second sacral nerve is justifiable.

If the motor function of a nerve must be conserved caution should be used and strength of alcohol should be gradually increased from weak solutions (10 per cent) up to those where slight motor disturbance is observed. This may be manifested by slight and transient weakness of the muscles of the lower extremity or of the sphincters. The latter may often be disregarded as colostomy and cystostomy have frequently been done before this treatment becomes necessary.

Sensory nerves are apparently effected by weaker solutions

In order to appreciate the importance of the sacral plexus your attention is called to a few points in the anatomy of the parts involved. After leaving the cord, the nerves forming the plexus extend down as the cauda equina and then pierce the dura to make their exit through the foramina of the sacrum. The dura extends down to the second or third segment of the sacrum where it becomes impervious. The sacral plexus is formed by the fusion of the anterior branches of the first, second, third, and

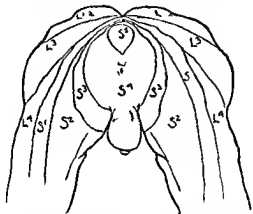


Fig. 34.—Sensory areas of the perineum supplied by the sacral nerves

fourth sacral nerves joined by the lumbosacral cord from the fourth and fifth lumbar nerves and augmented by a small branch from the fifth sacral. Branches are supplied to the viscera of the pelvis—the bladder, the vagina, and the rectum. These visceral branches form a communication with the sympathetic system. Ennervation of the sphincters comes from the second, third, and fourth sacral. The peripheral distribution is both sensory and motor, the importance of the latter element being shown in the appended chart.

From first sacral Nerves to the obturator internus, pectineus, quadratus femoris, pyramidalis.
 Superior gluteal Gluteus medius and minimus, Tensor fasciae femoris.
 Inferior gluteal Gluteus maximus.

- Great sciatic Posterior muscles of thigh, adductor magnus
 External popliteal
 Internal popliteal Muscles of the leg and foot
- From second sacral Nerves to the pyramidalis obturator internus
 Inferior gluteal Gluteus maximus
 Great sciatic Biceps semitendinosus
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- From fourth sacral
 Great sciatic Long head of the biceps
 Internal pudic Muscles of the perineum
 Internal popliteal Gastrocnemius soleus muscles of the sole of the foot
 Nerves to the pyramidalis levator ani ischiococcygeus
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Sensory nerves are apparently effected by weaker solutions

of alcohol than are motor nerves inasmuch as with solutions of 30 per cent strength painful sensations were abolished in this case while motor function was not interfered with in any degree

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CLINIC OF DR ALEXANDER B HEPLER

SEATTLE WASHINGTON

BILATERAL SIMULTANEOUS URETERORECTONEOSTOMY IN THE PRESENCE OF ADVANCED UPPER URINARY TRACT DISEASE

COFFEY'S tube technic for the simultaneous transplantation of the ureters to the bowel has extended the indications for ureterorectoneostomy to many of the acquired diseases of the lower urinary tract. The operation formerly a two stage procedure limited to diverting the urine in the congenital deformity of exstrophy of the bladder must now be thought of in any of the acquired conditions in which it might be advisable to dispense with the bladder as a reservoir for urine either for relief of intolerable symptoms or to permit its removal in advanced malignancy.

However in these acquired conditions because of urinary obstruction and infection there is occasionally advanced upper urinary tract disease with a degree of ureteritis, pyelitis and ureteral dilatation which would seem to preclude the possibility of transplantation. There is not only the question as to whether or not the anastomosis will hold but also as to the end results even if it is successful. The marked ureteral dilatation and infiltration prevent submucosal implantation which is the fundamental principle of Coffey's operation. Without the valvular protection of the submucosal transplant will the reflux of bowel contents and ascending infection in an already dilated infected ureter hasten a preexistent kidney infection and produce a rapidly progressing renal insufficiency?

I have had occasion to transplant enormously dilated and infiltrated ureters without attempting to do a submucosal anastomosis in three patients who demanded relief for intolerable

bladder conditions Coffey's closed duct technic made this possible. The catheter splinted the anastomosis until union had taken place. One patient with a carcinoma of the bladder which was treated by massive electrocoagulation and radium is alive and well after four years with no evidence of renal insufficiency or progressive infection. Another with a badly infected single kidney lived comfortably for two years. She had had a hysterectomy, a right nephrectomy, and a partial resection of the bladder for panmural ulcerative cystitis. She demanded relief for intolerable vesical tenesmus and incontinence, and the dilated left ureter was transplanted with difficulty because of marked pelvic adhesions.

In the case which I am reporting here there has been a decided improvement following anastomosis in a previously severe bilateral kidney infection with progressive renal insufficiency.

Case Report—Mr J A, age thirty six years was admitted to the County Hospital in February 1927 with urethral strictures and multiple perineal fistulae which followed a recent urinary extravasation. He remained in the hospital two years during which time five attempts were made to repair the urethra and remove the fistulae so that the ischioanal perineal and suprapubic regions were a mass of granulation and scar tissue and infected sinuses. He had a highly infected urine and passed stones and calcareous material through the fistulae and the remnants of his urethra. There were repeated attacks of chills and fever with leukocytosis and bilateral lumbar pain tenderness and rigidity indicating a progressive pyelonephritis. An estimation of the phenolphthalein output was impossible but examination of the blood nitrogen showed retention in increasing amounts. Prior to operation the blood urea was 97 mg per 100 cc and the creatinine 2.9. Roentgenograms showed 5 or 6 large stones in the lower right ureter. As a complication of the severe urinary infection he developed arthritis deformans.

Operation

A

Ureter by Wh

An incision large enough to admit the ureter was made in the bowel and the

ureters with the catheters attached were drawn into the rectum in the usual manner. The margins of the opening into the bowel were attached to the ureters by interrupted sutures. This line of suture was covered by another slightly higher. Further invagination of the ureter or plication of the bowel over it was impossible because of the danger of completely obliterating the intestinal lumen. For the remainder of the operation and in the postoperative management the standard procedures were followed.



FIG 346—Roentgenogram forty five minutes after uroselectan intravenously. Bilateral ureterorectoceostomy two years previously. At that time ureters enormously dilated. Right contained 5 large calculi. The marked progressive infection with renal insufficiency prior to the operation has improved despite the inability to do a submucosal implant with its protective valve action.

Postoperative convalescence was uneventful until the twelfth day three days after the catheters had been removed. There were chills and fever followed by a discharge of urine from the abdominal wound. Four days later there was a fecal fistula which persisted for three weeks although urine appeared in the wound for a month longer. The majority however, was passed by rectum. The wound finally closed and he was discharged from the hospital.

Progress Notes—August 27 1930 (one and one half years after the transplant) Patient has gained 20 pounds in weight. Arthritis has markedly improved. No lumbar pain. No fever for the past three months. Has a bowel movement on arising and a loose movement three or four times before noon. In the afternoon he passes fairly clear urine from the rectum.

Pyelo-ureterograms were made by the intravenous injection of uroselectan (Fig. 346). The right kidney was displaced outward and rotated and there was a moderate degree of hydronephrosis. There was a slight dilation of the left kidney pelvis but several of the minor calyces were sharply defined. Both ureters were dilated but to a much less degree than at operation. Two stones which were missed were present in distal stump of the right ureter. The uroselectan which collected in the rectum cast a large shadow.

Two years ago uroselectan was not available and because of the impossibility of cystoscopy in this case the upper urinary tract could not be made opaque prior to operation. Hence we have no pyelo-ureterograms for comparison with the present picture. However judging from the conditions found at operation I think we may say with a reasonable degree of certainty that there has been a definite hydronephrotic repair. There is no question as to the marked improvement of the renal infection as indicated by the clinical symptoms.

Comment—This case demonstrates the feasibility of transplanting the ureters into the bowel even in the presence of upper urinary tract disease with dilatation and infiltration of the ureters to a degree sufficient to prevent submucosal implantation. After two years despite the absence of valve protection there has not only been no progressive kidney destruction but a severe preexisting renal infection has subsided with improved drainage as indicated by the clinical symptoms.

The value of intravenous urography in the estimation of changes in the upper urinary tract after transplantation of the ureters into the bowel is obvious.

CLINIC OF DR. FRANK HINMAN

UNIVERSITY OF CALIFORNIA HOSPITAL

THREE TYPES OF RADICAL UROGENITAL SURGERY OF LIMITED BUT WELL DEFINED APPLICATION

THERE are a number of conditions met with in urogenitology which seem beyond the reach of relief of our modern methods of treatment. These are the hopeless cases for which all manner of palliative measures have been developed to such an extent that few specialists rarely think of radical measures. There are three types of conditions however in which only too rarely early radical treatment effects cure and these are I Cancer of the prostate II genital tuberculosis and III tumors of the testis.

In each one of these three conditions application of radical treatment is quite limited but when used in a definite group in which radical treatment is applicable results will be most gratifying. The limitations of the application of these radical measures however should be thoroughly understood and in order to be successful one should never attempt to overstep these well defined limitations. Of course there will be borderline cases in which a mistake is excusable and such mistakes are justifiable in view of the possibility of a complete cure had the radical measure been successful. The following case reports will briefly serve to illustrate the type of radical surgery referred to.

I. CARCINOMA OF THE PROSTATE

The unfortunate individual who contracts a carcinoma of the prostate is usually doomed to years of misery for which little relief is obtainable. Two distinct groups of cases should be recognized clinically because in the first group an early radical

operation offers every hope of complete removal of the cancer. These two groups are (1) Early malignancy in which involvement is limited to the prostate and vesicles (2) advanced malignancy in which there is also involvement of the bladder with or without general metastases. This latter group should be subdivided (1) Those patients with prostatism and (2) without prostatism. Operation is not indicated in subdivision 2 but is sometimes in 1 to relieve urinary obstruction. The

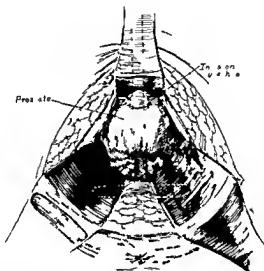


Fig. 347.—Prostate exposed as for ordinary enucleation. The lobes on each side have been incised so as to give a large field and better exposure. An incision made transversely just at the apex of the prostate.

following cases, two still in the hospital illustrate the possibilities in treatment of cases under Group 1. Such opportunities come only too rarely. I have seen only 17 cases in which the radical operation under discussion could be performed. The adoption of routine rectal examinations with an understanding of the early clinical evidence of malignancy will very much increase the number of early diagnoses and the opportunity of application of radical surgery. There will of

course be mistakes in the clinical recognition of those cases of cancer limited strictly to the prostate and vesicles, but I have not yet operated without finding cancer. When in doubt one should wait, or always confirm the diagnosis by frozen section biopsy at the time of operation.

Involvement of the bladder neck occurs early. When not extensive, it can be resected with the prostate and vesicles.

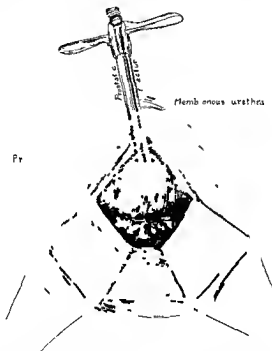


Fig. 348—The long tractor has been removed and a short tractor inserted into the incision of the urethra at the apex of the prostate.

But the really hopeful cases are those in which there are no metastases and the lesion has not yet invaded the bladder neck. Radical enucleation of the prostate and vesicles is then quite simple and the cure assured. Figures 347-352 illustrate the chief technical steps of operation and the following case histories its application.

operation offers every hope of complete removal of the cancer. These two groups are (1) Early malignancy in which involvement is limited to the prostate and vesicles, (2) advanced malignancy in which there is also involvement of the bladder with or without general metastases. This latter group should be subdivided (1) Those patients with prostatism and (2) without prostatism. Operation is not indicated in subdivision 2, but is sometimes in 1 to relieve urinary obstruction. The

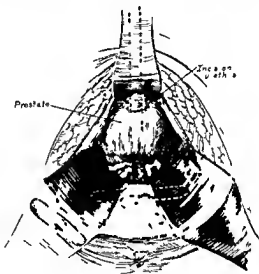


Fig. 341.—Prostate exposed as for ordinary enucleation. The levator ani on each side have been incised so as to give a bigger field and better exposure. An incision made transversely just at the apex of the prostate.

following cases, two still in the hospital, illustrate the possibilities in treatment of cases under Group 1. Such opportunities come only too rarely. I have seen only 12 cases in which the radical operation under discussion could be performed. The adoption of routine rectal examinations with an understanding of the early clinical evidence of malignancy will very much increase the number of early diagnoses and the opportunity of application of radical surgery. There will of

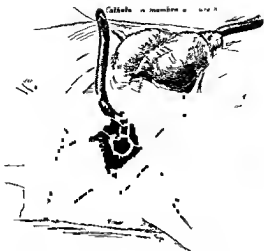


Fig 351 —Method of suturing the divided urethra and the bladder neck around the urethral catheter

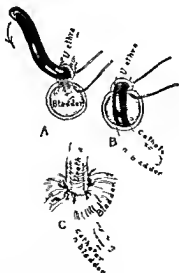


Fig 352 —More detailed drawing of method of suture shown in Fig 351

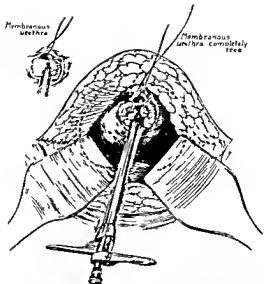
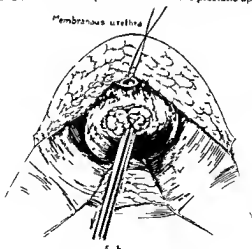


Fig 349 —The gland has been freed by blunt dissection laterally and anteriorly and the urethra completely divided at the prostatic apex



Case II—P C No 7519 Age sixty three years Referred by Dr R V A Lee of Palo Alto because of a suspicious indurated area of the prostate Patient had gradually increasing frequency for which he was catheterized in March 1930 with a severe reaction which put him to bed for three weeks and an epididymitis on the right side He has been getting prostatic massages recently He has nocturia four to five times with occasional dysuria The urine is cloudy with pus and bacteria On rectal examination the prostate is slightly enlarged and presents a stony hard area on the outer margin of the right lobe the rest of the gland feels elastic Residual urine was 60 cc and the bladder capacity 210 cc On cystoscopic examination there was a very shallow sulcus anteriorly no evidence of any involvement of the bladder neck x Rays were negative for any metastases There was a question as to the malignancy but because of the uncertainty operation was advised Radical prostatoseminal vesiculectomy was performed in June, 1930 After the prostate was exposed a portion of the indurated area was excised and submitted for frozen section Report came back—no evidence of malignancy (Dr Ophuls) On account of the prostatism and pronounced infection it was thought advisable to perform a radical removal

This case illustrates the difficulty that is encountered in making early diagnosis of carcinoma of the prostate The induration was in every way characteristic of stony hard induration found in the previous case which was an adenocarcinoma The convalescence of the patient was uneventful He left the hospital within two weeks and has had good control of his urine since with complete relief of his prostatism The urine is clear, free of infection, and shows the advantage of radical seminal vesiculectomy in these badly infected cases

Case III—P C No 7062 Age eighty four years Complaint Hematuria which began about one month ago with slight burning in the penis The bleeding was at the beginning of urination and only occasionally present There was slight difficulty in starting the stream which had diminished in size He had a residual of 65 cc and on rectal examination the prostate was slightly enlarged with obliteration of the notch and furrow It was uniformly and somewhat indurated but on the right lateral margin there was a stony hard area about $1\frac{1}{2} \times 2$ cm broad A diagnosis of carcinoma of the prostate was made and in November 1929 radical prostatectomy and seminal vesiculectomy was performed

sections into the lumina Many ducts are dilated and filled with sebaceous material Another area demonstrates an epithelial revolution in which the

CASE I—P. C. No. 2051. Age sixty-six years. Seen April 29, 1931, with complaint of pain in the suprapubic region and rectum. There was a residual of 20 cc. Rectal examination shows a prostate that feels about normal in size but presents the characteristics of stony hardness which seems to be slightly adherent to the rectum. It is otherwise movable and there is no lateral extension or adhesions. Induration extends up into the seminal vesicles but upper limits can be readily reached. Radical prostatectomy, seminal vesiculectomy was performed. The whole mass removed measured $5\frac{1}{2} \times 5 \times 2$ cm. only. Following is the microscopical study by the pathologist.

'Sections from different parts of the prostate gland and in particular from the two regions indicated on the gross specimen show invasion by epithelial cells. This invasion is of two types—one type is represented by large alveoli lined usually with a single layer of clear cuboidal cells, the nuclei round and vesicular, and fairly abundantly supplied with a chromatin network. Many of these large alveoli contain papillary ingrowths often so arranged as to form smaller alveoli, so that frequently the alveolar space is almost completely filled with these secondary formations. In the second

infrequent. In the two special regions marked for examination the process extends to the outer limits of the tissue. The tumor stroma varies in amount comparatively abundant about the larger alveolar structures, less in amount and more compact elsewhere. The stroma is infiltrated by an occasional lymphocyte and plasma cell. Sections taken from what appears to be the anterior portion of the prostate show only a slight amount of tumor invasion. The prostatic glands in this region appear moderately hyperplastic, many

There was no residual. The control was excellent. bladder capacity 300 cc. No. 28 sound inserted without difficulty. the bladder was clear. the blood

fixation. Eight gold radium seeds of 13 millicuries were implanted in this indurated mass. The patient has been seen several times since. The dilatation seems to have relieved him of his residual. There is no evidence of recurrence of his cancer now more than ten years since his operation.

Course in Hospital—Retention catheter in place on arrival (six days) Preparation for operation uneventful with afebrile course thirteen days On March 25th the phenolsulphonephthalein test was First hour 350 cc 17 per cent second hour 300 cc 13 per cent total 30 per cent

On March 26th under spinal anesthesia 0.12 Gm. neocaine a radical perineal prostateseminal vesiculectomy with implantation of eleven radium emanation seeds in the bladder neck was performed The postoperative course was essentially uneventful until the bowels opened on the fifth day, when the wound began to hemorrhage deep in the perineal incision The skin bulged and an infected clot was removed the following day (sixth day, April 1st) The maximum temperature was 38 C

On April 4th the ninth day postoperative the temperature was elevated to 39.9 C and there were a few deep coarse inspiratory râles in the right lower lobe with harshness of breath sounds with moderate dulness clearing in one day Moderate diarrhea and colic were controlled by tr. opii The temperature continued to run a septic course

April 6 1931 Urine examination White blood cells 50 to 60 red blood cells 8 to 10 rods ++ Perineal wound draining considerable amount of foul brownish pus and the surfaces covered with sloughing membrane Culture from wound showed *Bacillus coli* *Streptococcus alpha B proteus* and *B. pyocyaneus*

April 8th Phthalein increased to 41 per cent Wound irrigated twice daily with 1:400 acetic acid Continuous hot compresses applied externally Blood count Fifty two per cent hemoglobin 2 900 000 red cells white count 8200 90 per cent polymorphonuclears lymphocytes 9 per cent

April 14th Blood transfusion of 500 cc whole blood Following this there was a progressive drop in temperature from a maximum of 39 to a maximum of 37.4 in three days

Seridium, grain 2 t. i. d. The urine quickly cleared up showing 2 to 4 white blood cells per h. d. f. red blood cells 0 cocci +++ rods + The perineal wound improved rapidly especially following cold quartz light treatment starting April 19 1931

April 21st The patient's general condition at present is excellent The catheter is still in place There is no perineal leakage

April 28th Catheter has been out five days There is no perineal leakage Control is perfect

The Pathologic Report—*Gross Description* The specimen is an unusually intact prostate with attached seminal vesicles and 3 cm. lengths of each vas deferens A separate small gray biopsy specimen is received measuring 8 x 4 x 3 mm This piece is hard and offers resistance to the knife It is entirely embedded for microscopical examination The prostate specimen weighs 72 Gm. and is bilaterally symmetrical The prostatic part measures 5.5 x 4.5 x 4 cm. A shaggy fibrous capsule covers a surface smooth except for a few small hemorrhagic irregular nodules on the posterior surface between the bladder neck and the fork of the seminal vesicles The vasa do not appear altered The vesicles are firm and nodular and appear invaded by a new growth from above Various sections reveal an increase in fibro-muscular stroma but little evidence of epithelial irregularity The seminal

cellular elements have broken through their limiting membranes and are running wildly through the fibrous stroma in malignant fashion. It is difficult to gauge the extent of this cancer but peripheral sections and sections from the ends of the vesicles and vasa show no malignant invasion and it may be reasonably presumed that the cancer is well removed. *Diagnosis* Carcinoma of the prostate.

Convalescence was uneventful. The patient has been seen several times since. He has good control of urination; the urine is clear, free of infection; there is no nocturia. Rectal examination shows no induration nor suspicion of invasion. The patient was last seen January 16, 1931.

Case IV—U. C. No. 80643. The patient, a married man aged sixty-four years, entered the hospital on March 19, 1931, complaining of difficult urination for three months. The present illness began about three months ago with gradual onset with no other symptomatology than progressively increased difficulty in voiding. Later he noticed frequency—nocturia two to three times day, eight to ten times, and a feeling that his bladder was not completely emptied. There was occasional dysuria during micturition. He had an attack of acute urinary retention about March 1st requiring catheterization at which time approximately 1800 cc. of urine were drawn from the bladder. No hematuria, pyuria, dribbling or gravel has ever been noted. There has been no backache or joint pains.

Family History—Father died at the age of sixty-three of heart trouble; mother died at the age of sixty-five of diabetes; one sister living with hypertension. No familial diseases.

Past History—Diphtheria, age 26, with no sequelae; otherwise no diseases (infectious). *Systems* Cardiorespiratory negative. Gastrointestinal negative. Genito-urinary, Neisser, age 23, with no apparent complications. *Operations* Hemorrhoidectomy, 1890. *Accidents* None serious. *Marital* Married thirty-eight years; wife living and well; one child living and well. *Weight* No recent loss; 167 pounds. *Habits* Unimportant.

Physical Examination—Well-developed and nourished male appearing

six months About six months ago he began to urinate two to three times at night increasing to six to seven times There has been slight dribbling following urination There is no difficulty in starting the stream, no cloudy urine hematuria, nor gravel passed There has been no recent loss of weight

Family history is essentially negative, no tuberculosis, cancer or mental derangement

Past History—Childhood diseases without sequelae Influenza in 1921 with no complications *Systems* Essentially negative except for absence of libido for years Venereal denied *Habits* unimportant

Physical Examination—Well developed, moderately obese male, about sixty years in no apparent discomfort, cooperative The skin and mucous membranes are essentially negative with no demonstrable pallor The heart and lungs are negative except for soft systolic murmur over entire precordial transmitted in neck No capillary pulse *Blood pressure* 190/94 Radial vessels moderately sclerotic

Rectal Examination—Normal sphincter tone Prostate slightly enlarged bilaterally more so on left than right the consistency of the left lobe throughout is stony hard with a few small areas of induration in the right lobe The median sulcus is partially obliterated The lateral sulci are deepened The gland seems to be slightly fixed The seminal vesicles are not felt

Phthalein—Sixty four per cent total in two hours

Urine—White blood cells 40 to 50 Red blood cells 2 to 4 Rods +

Blood Count—Hemoglobin 85 per cent Sahli Red blood cells 5,300,000 White blood cells 13,200 Polymorphonuclears 31 per cent lymphocytes 17 per cent

Flat x ray plate of the pelvis and lumbar vertebrae a few weeks before showed no evidence of metastases

Course in Hospital—Patient placed on retention catheter and bilateral vasoligation performed on March 19, 1931 The temperature increased to a maximum of 39 on March 21st and slowly came down to a maximum of 37.2 on April 11th on which day a radical perineal prostatoseminal vesiculectomy was performed under spinal anesthesia

The *phthalein* previous to operation was 72 per cent in two hours

The postoperative course was uneventful except for a daily swing of temperature to 39 which has gradually come down to 37.6 maximum on the ninth day

The pathologic report follows

Gross Description—The specimen is an unusually intact prostate gland with seminal vesicles and about 5 cm. of each vas deferens attached It weighs 75 Gm., has an over all measurement of 7 x 5 x 4.5 cm. It has a sharp fibrous capsule. The capsule is thickened and the capsule

vesicles shows these structures apparently invaded and compressed by cellular new growth

vesicular lumina are filled by a translucent colloid appearing material. Sections are taken for microscopic study.

Microscopical—The sections from the prostate, seminal vesicles, and bladder neck all show carcinoma tissue. In the prostate the new growth forms myriad small alveoli having a scant stroma of fibromuscular tissue. There is a little normal prostatic glandular tissue left but this is closely pressed upon by oncoming neoplasm. The cells of the new growth frequently hold mucous droplets and their nuclei show many mitoses. The lumina of the



Fig. 353.—Photograph of gross specimen of prostate vesicles and ampulla intact removed from Case IV.

seminal vesicles are not distinctly broken down by carcinoma but their walls are heavily invaded. The biopsy from the bladder neck is largely made up of fibrous tissue and smooth muscle but a portion shows distinct invasion by strands of hyperchromatic cells. An occasional alveolar pattern is formed here.

Diagnosis—Adenocarcinoma of the prostate invading the seminal vesicles and bladder neck (Fig. 353).

CASE V—U. C. No. 80642. A rancher married, aged sixty-five years, entered the hospital on March 19, 1931, complaining of nocturia for the past

six months. About six months ago he began to urinate two to three times at night, increasing to six to seven times. There has been slight dribbling following urination. There is no difficulty in starting the stream, no cloudy urine, hematuria, nor gravel passed. There has been no recent loss of weight.

Family history is essentially negative, no tuberculosis, cancer or mental derangement.

Past History—Childhood diseases without sequelae. Influenza in 1921 with no complications. *Systems* Essentially negative except for absence of libido for years. Venereal denied. *Habits* unimportant.

Physical Examination—Well developed, moderately obese male, about sixty years in no apparent discomfort cooperative. The skin and mucous membranes are essentially negative with no demonstrable pallor. The heart and lungs are negative except for soft systolic murmur over entire precordial transmitted in neck. No capillary pulse. *Blood pressure* 190/94. Radial vessels moderately sclerotic.

Rectal Examination—Normal sphincter tone. Prostate slightly enlarged bilaterally more so on left than right. The consistency of the left lobe throughout is stony hard with a few small areas of induration in the right lobe. The median sulcus is partially obliterated. The lateral sulci are deepened. The gland seems to be slightly fixed. The seminal vesicles are not felt.

Phthalein—Sixty four per cent total in two hours.

Urine—White blood cells 40 to 50. Red blood cells 2 to 4. Rods +.

Blood Count—Hemoglobin 85 per cent Sahli. Red blood cells 5,300,000. White blood cells 13,200. Polymorphonuclears 31 per cent, lymphocytes 17 per cent.

Flat x ray plate of the pelves and lumbar vertebrae a few weeks before showed no evidence of metastases.

Course in Hospital—Patient placed on retention catheter and bilateral vasoligation performed on March 19, 1931. The temperature increased to a maximum of 39 on March 21st and slowly came down to a maximum of 37.2 on April 11th on which day a radical perineal prostatoseminal vesiculectomy was performed under spinal anesthesia.

The *phthalein* previous to operation was 72 per cent in two hours.

The postoperative course was uneventful except for a daily swing of temperature to 39 which has gradually come down to 37.6 maximum on the ninth day.

The pathologic report follows.

Gross Description—The specimen is an unusually intact prostate gland with seminal vesicles and about 5 cm. of each vas deferens attached. It weighs 75 Gm., has an over all measurement of 7 x 5 x 4.5 cm. It has a

vesicles shows these structures apparently invaded and compressed by cellular new growth.

vesicular lumina are filled by a translucent colloid appearing material. Sections are taken for microscopic study.

Microscopical—The sections from the prostate seminal vesicles, and bladder neck all show carcinoma tissue. In the prostate the new growth forms myriad small alveoli having a scant stroma of fibromuscular tissue. There is a little normal prostatic glandular tissue left but this is closely pressed upon by oncoming neoplasm. The cells of the new growth frequently hold mucous droplets and their nuclei show many mitoses. The lumina of the



Fig. 333—Photograph of gross specimen of prostate vesicles and ampulla intact removed from Case IV.

seminal vesicles are not distinctly broken down by carcinoma but their walls are heavily invaded. The biopsy from the bladder neck is largely made up of fibrous tissue and smooth muscle but a portion shows distinct invasion by strands of hyperchromatic cells. An occasional alveolar pattern is formed here.

Diagnosis—Adenocarcinoma of the prostate invading the seminal vesicles and bladder neck. (Fig. 333)

Case V—L. C. No. 8064. A rancher married, aged sixty-five years entered the hospital on March 19, 1931, complaining of nocturia for the past

six months. About six months ago he began to urinate two to three times at night, increasing to six to seven times. There has been slight dribbling following urination. There is no difficulty in starting the stream, no cloudy urine, hematuria, nor gravel passed. There has been no recent loss of weight.

Family history is essentially negative no tuberculosis cancer or mental derangement

Past History—Childhood diseases without sequelae. Influenza in 1921 with no complications. *Systems* Essentially negative except for absence of libido for years. Venereal denied. *Habits* unimportant.

Physical Examination—Well developed moderately obese male about sixty years in no apparent discomfort cooperative. The skin and mucous membranes are essentially negative with no demonstrable pallor. The heart and lungs are negative except for soft systolic murmur over entire precordial transmitted in neck. No capillary pulse. *Blood pressure* 190/94. Radial vessels moderately sclerotic.

Rectal Examination—Normal sphincter tone. Prostate slightly enlarged bilaterally more so on left than right the consistency of the left lobe throughout is stony hard with a few small areas of induration in the right lobe. The median sulcus is partially obliterated. The lateral sulci are deepened. The gland seems to be slightly fixed. The seminal vesicles are not felt.

Phthalate—Sixty four per cent total in two hours

Urine—White blood cells 40 to 50 Red blood cells 2 to 4 Rods +

Blood Count—Hemoglobin 85 per cent Sahli. Red blood cells 5,300,000. White blood cells 13,200. Polymorphonuclears 31 per cent. Lymphocytes 17 per cent.

Flat x ray plate of the pelvis and lumbar vertebrae a few weeks before

h. and

The postoperative course was uneventful except for a daily swing of temperature to 39 which has gradually come down to 37.6 maximum on the ninth day.

The pathologic report follows:

Gross Description.—The specimen is an unusually intact prostate gland with seminal vesicles and about 5 cm of each vas deferens attached. It

• • • • •

new growth

vesicular lumina are filled by a translucent, colloid appearing material. Sections are taken for microscopic study.

"Microscopical"—The sections from the prostate, seminal vesicles, and bladder neck all show carcinoma tissue. In the prostate, the new growth forms myriad small alveoli having a scant stroma of fibromuscular tissue. There is a little normal prostatic glandular tissue left, but this is closely pressed upon by oncoming neoplasm. The cells of the new growth frequently hold mucous droplets and their nuclei show many mitoses. The lumina of the



Fig. 353.—Photograph of gross specimen of prostate, vesicles and ampulla intact removed from Case IV.

seminal vesicles are not distinctly broken down by carcinoma but their walls are heavily invaded. The biopsy from the bladder neck is largely made up of fibrous tissue and smooth muscle but a portion shows distinct invasion by strands of hyperchromatic cells. An occasional alveolar pattern is formed here.

"Diagnosis"—Adenocarcinoma of the prostate invading the seminal vesicles and bladder neck. (Fig. 353)

Case V—U. C. No. 80642. A rancher married, aged sixty-five years entered the hospital on March 19, 1931, complaining of nocturia for the past

II. GENITAL TUBERCULOSIS

There is a limited group of cases with tuberculosis of the seminal tract in whom radical surgery gives better results than conservative or purely medical lines of treatment. The cases may be largely subdivided into two groups. Group 1, those cases in whom clinically the seminal vesicles and prostate are definitely involved with or without involvement of the epididymis, and Group 2, those cases with definite tuberculosis of the epididymis without clinical evidence of involvement of the vesicles and prostate. The question as to whether the primary focus of involvement is epididymis or prostatovesicle remains open. There is good evidence in support of either view. Therefore, it is of course possible that both routes of invasion may occur, sometimes the epididymis being primary, sometimes the prostatoseminal vesicle area. The results in those few cases in which there is definite nodulation and involvement of the prostate and vesicles or vesicles alone without generalized tuberculosis or active pulmonary tuberculosis or definite miliary tuberculosis radical removal of the vesicles that portion of the prostate involved and vas deferens with the epididymis give a high percentage of cures. In our limited number of 18 cases we have no failures of those qualified to fall into this limited group not having active tuberculosis outside the urogenital tract.¹ The following additional cases will serve to illustrate this group.

Case 1—P. C. No. 3843. Patient was first seen in January 1925 complaining of pain in the right flank following injury. He was then twenty-four years old. The pain became more severe. On the second day after the accident he noticed blood in the urine and began to have burning on urination. On two occasions he had retention requiring catheterization. On examination the urine was found to be loaded with red blood cells and pus cells without organisms. The phthalein output was 57 per cent in two hours. The chest was negative to examination but on x-ray there was beading of the bronchial markings behind the first interspace on the right and extreme fibrous thickening about both lung roots with question of a small area of activity at the right apex. On *cystoscopic examination* there was a small ulcer about the right ureteral orifice and the urine from this side contained many red and pus cells without organisms which showed on stained smear.

¹ Thirteen of these cases are reported in detail in the Journal of Urology 20:521-540 November 1923.

"In addition there is a small biopsy piece said to be from the vesical neck, which measures $1 \times \frac{1}{2} \times \frac{1}{4}$ cm. This shows a fibromuscular stroma and very little if any epithelial tissue.

"Representative sections are taken for microscopical study.

"*Macroscopic*.—Sections from the lateral lobes show a not unusual fibromuscular stroma supporting many large nests of overgrown epithelium compatible with benign glandular hypertrophy. In addition there are smaller areas of irregular apparently invading malignant epithelium forming disordered alveolar patterns and strands of cells. These cells vary in size and shape, often have hyperchromatic nuclei and show mitoses. The malignant tissue has provoked a heavy round cell inflammatory reaction.



II GENITAL TUBERCULOSIS

There is a limited group of cases with tuberculosis of the seminal tract in whom radical surgery gives better results than conservative or purely medical lines of treatment. The cases may be largely subdivided into two groups. Group 1, those cases in whom clinically the seminal vesicles and prostate are definitely involved with or without involvement of the epididymis, and Group 2, those cases with definite tuberculosis of the epididymis without clinical evidence of involvement of the vesicles and prostate. The question as to whether the primary focus of involvement is epididymis or prostatovesicle remains open. There is good evidence in support of either view. Therefore it is of course possible that both routes of invasion may occur, sometimes the epididymis being primary, sometimes the prostatovesicular area. The results in those few cases in which there is definite nodulation and involvement of the prostate and vesicles or vesicles alone without generalized tuberculosis or active pulmonary tuberculosis or definite miliary tuberculosis radical removal of the vesicles, that portion of the prostate involved and vas deferens with the epididymis give a high percentage of cures. In our limited number of 18 cases we have no failures of those qualified to fall into this limited group not having active tuberculosis outside the urogenital tract.¹ The following additional cases will serve to illustrate this group.

Case I—P. C. No. 3843. Patient was first seen in January 1925 complaining of pain in the right flank following injury. He was then twenty-four years old. The pain became more severe. On the second day after the accident he noticed blood in the urine and began to have burning on urination. On two occasions he had retention requiring catheterization. On examination the urine was found to be loaded with red blood cells and pus cells without organisms. The phthalein output was 57 per cent in two hours. The chest was negative to examination but on x-ray there was beading of the bronchial markings behind the first interspace on the right and extreme fibrous thickening about both lung roots with question of a small area of activity at the right apex. On *cystoscopic examination* there was a small ulcer about the right ureteral orifice and the urine from this side contained many red and pus cells without organisms which showed on stained smear.

¹ Thirteen of these cases are reported in detail in the Journal of Urology 20:521-540 November 1928.

acid fast organisms. Urine from the left kidney negative. The left kidney had a phthalein output of 23 per cent with no appearance on the right. On February 10th a *right nephrectomy* was performed. A rather small caseo-cavernous tuberculous kidney was removed. The patient was discharged on March 1st with two small sinuses in the back, still having frequency with a total phthalein output of 66 per cent in two hours.

He was readmitted three weeks later because of a pronounced hematuria of three days' duration. Ulcers of the bladder were fulgurated under gas and oxygen. He was given a transfusion. The hemoglobin dropped to 55 per cent with red blood cells 2,660,000. Following this discharge he had office treatments for urethral strictures and a chronic epididymitis gradually developed and has increased.

On July 20th a *left epididymovasectomy* was performed. At this time there was no palpable evidence of involvement of prostate or vesicles.

On July 26, 1927, he was readmitted with a dull ache over the left kidney and general weakness. He was getting up once or twice at night but did not have much bladder discomfort otherwise. His hemoglobin was 80 per cent, red blood cells 4,690,000, urine quite purulent, phthalein 63 per cent in two hours. He was running a marked septic temperature. He had just before entry a bronchitis and nasopharyngitis. On cystoscopic study a colon bacillus infection of the left kidney was found.

His final entry was on May 14, 1928, with soreness and swelling of the right epididymus of five or six weeks' duration. This had ruptured through the skin surface, forming a discharging sinus. There has been increasing loss of weight of 10 pounds in a month. There has been no recurrence of his frequency or burning of urination. Examination of his chest shows slight dulness of both apices but no evidence of any activity. On rectal examination there is nodulation of the left seminal vesicle but not of the prostate.

On May 15th *radical bilateral seminal vesiculectomy, vasectomy and right epididymectomy* was performed. There was some postoperative bleeding with evidence of shock for which he was treated by whole blood intramuscularly and 500 cc. 10 per cent glucose. Within twenty-four hours bleeding had ceased and his condition was satisfactory with a hemoglobin of 70 per cent and red blood count of 3,320,000. From this time on general improvement was steady and satisfactory. A urethral catheter was worn because of the development of a urinary perineal fistula. This was frequently changed and he was discharged on July 25th with all closure of urinary leakage on the seventy-fifth day. He has been seen at the office frequently since then. One year ago he developed pain in the hip which was diagnosed as tuberculosis of the joint. With rest this cleared up. He was last seen on April 3, 1931. He is working steadily, feels perfectly well without symptoms or complaint.

Case II—U. C. No. 52,263. A young boy, aged fourteen years, referred

sisted Six weeks ago examination by his family doctor showed the presence of pus in the urine He gradually developed a nocturia and frequency of urination with burning A week ago he caught cold and began to have reappearance of bloody urine On admission he was passing considerable clots

On examination the orifice was quite purulent 100 to 120 white blood cells 30 to 40 red blood cells to a high dry field The right epididymis showed a hard asymmetrical nodule $1 \times \frac{1}{2}$ cm of the globus minor which was not tender On rectal examination the prostate was negative but the left seminal vesicle presented many nodules and there were a few palpable in the right Total phthalein was 68 per cent Plain x ray plates were negative



Fig 355 —Photograph of vesicles vasa and epididymis removed in Case II Not all of the vas of the right side was removed The left vas of course has been divided and re united for photography

left l
show

following this examination The function of the right kidney was 28 per cent in thirty minutes and there was a transvesical output for the same period of 18 per cent On May 22d again unable to catheterize the left ureter beyond 5 cm The bladder and orifices were of normal appearance On July 23d he was first seen by me The above findings on rectal and external examination confirmed the above report both seminal vesicles showed

nodulation and there was a hard nodule of the globus minor of the right epididymis. On cystoscopic study the bladder showed no ulceration the ureteral orifices were negative. Both sides were catheterized with 2 to 4 pus cells from the right side and some clumps but no drainage from the left. The acid fast stains and cultures of urine of the right side were negative. There was a phthalein output in fifteen minutes of 21 per cent with a leakage into the bladder of 4 per cent and no drainage through the left catheter. Left nephrectomy was advised which was done on August 6, 1929, by Dr. Olsen. Convalescence was uneventful and he was discharged on September 15th with instructions to return in two or three months. The specimen was a massive caseocavernous tuberculosis of the left kidney.

The patient reentered the hospital on November 6, 1929. Physical examination has remained essentially the same. The lungs are negative. At this time there is definite induration and nodulation of the left epididymis whereas the nodule on the right globus minor has remained about as previously noted. On rectal examination there is definite bilateral involvement of both seminal vesicles and ampullae of the vasa. There does not seem to be any involvement of the prostate. No nodules are palpable in it.

On November 7th a radical bilateral seminal vesiculectomy, vasectomy and epididymectomy was performed (Fig. 355). Convalescence was uneventful and he was discharged on November 21st with the operative wound completely healed without any urinary leakage at any time and no persistent sinus.

He was last heard from on April 21, 1931, apparently in excellent health working and going to high school. He has no urinary symptoms or complaint.

Note—The only objection to radical surgery in these cases is the likelihood of a persistent perineal sinus which is rarely urinary and only occurs in those cases where there has been rather advanced involvement of the prostate. Those cases in which the lesion is limited to the vesicles promptly heal and urinary fistulae do not occur. Sinuses when not urinary cause little if any inconvenience. The urinary ones may be troublesome for several months postoperatively. This burden does not appear too great in view of the improvement in general health and well being in evidence of the more or less complete removal of any active tuberculous focus.

III. TUMOR OF THE TESTIS

It is well known that tumor of the testis is an extremely malignant type of disease. Statistics still support the figures of Chevassu that only about 15 per cent survive castration. Recent reports establish the fact that certain types of tumors of the

testicle are quite susceptible to x ray and radium and these measures with or without castration will undoubtedly markedly improve the above figures. However, there is one type of tumor unaffected by either radium or x ray and the rather hopeless 85 per cent mortality still remains imminent in this group. One is therefore justified clinically in subdividing tumors of the testicle for purposes of radical treatment into two groups. Group 1, the unicellular type of tumor, popularly designated as seminoma, and Group 2, the mixed cell type of tumor or true teratoma. The seminoma is radiosensitive, teratoma not. At the time of castration, therefore, which should be done at the earliest possible time the tumor is immediately submitted for biopsy and, if report of a mixed tumor is given, radical surgery is then the only means left to reduce the above extremely high mortality. But radical surgery is not applicable in every case of teratoma, in fact it is applicable in very few cases seen clinically, and very often, once thought to be applicable, and the radical measures undertaken, will be found impossible of completion. Radical resection of the preaortic lymph zone is indicated in those cases of teratoma in which clinically there are no palpable abdominal glands. Attempts to remove palpable glands are useless. When the abdomen is negative on examination and x rays have been negative for any evidence of metastases radical resection of the lymph zone of the testis teratoma is justified. The following cases will illustrate the application of this subdivision.

Case I—P. C. No. 700 age thirty four years married. Referred by Dr. R. M. Lhamon. The history is irrelevant. Four years ago patient first noticed slight swelling of his right testis which has continued to increase in size slowly until it reached the size of an orange at the time of removal in September 1930. Plain x ray pictures of the chest and abdomen were negative. Sections of the tumor showed a pure unicellular type tumor of the testis recognized as a simple seminoma and the patient was referred back for deep x ray therapy in place of radical removal of the primary lymph zone for which he was primarily referred to us.

Case II—P. C. No. 7124 age thirty two years. Referred by Dr. Harold Brunn because of a swelling of the left testicle of one week's duration which came on twenty-one days after the patient contracted an acute Neisser. During this past week there has also been a tender mass in the left axilla.

and there has been a mild degree of temperature. No urinary symptoms. The swelling of the left testicle is a rounded mass which is elastic throughout without fluctuation. The outline of the epididymis cannot be differentiated from the testicular mass. The lower urinary tract is otherwise negative.



CASE

There seems to have been complete clearing up of the neisserian infection. The urine is clear in all three glasses. The tumor mass of the testicle would seem to have no relation to the fever or the inflammatory mass in the axilla. Two weeks later an orchidectomy was performed for purposes of diagnosis.

Grossly the tumor appeared to be a teratoma of the testis measuring 5 x 4 cm on sagittal section. It has a honey combed appearance and is covered by a grayish yellow material. Toward the rete the tissue is quite soft. Cystic spaces filled with gel are seen and there is a fairly good sized cyst 1 cm in diameter at one pole. The surface has an irregularly mottled red and yellow color. The epididymis is small measuring only 3 cm in length by 1 cm in width. Representative sections show large areas of the caseous material intermixed with cystic spaces filled with red cells. There is considerable fibrous tissue bordering these areas supporting a tissue resembling epithelium which is growing without restraint. A bit of compressed testicular tissue was included in one section. The epididymis is practically negative. No cartilage is seen. *Diagnosis:* Teratoma.

On December 13, 1929, radical resection of the pre-aortic lymph zone was performed. Tissues removed are shown in Fig. 356. The largest lymph gland removed measures 1.8 x 1.2 and this gland on cut section presents a rather homogeneous white surface. The aortic group represented by one long pecan shaped node distally and extending up toward the renal pedicle are a number of adherent nodes with considerable fat and fibrous tissue adherent to the mass. Several of these nodes were sectioned and in some there is a discoloration due to the hemorrhage, but in general they present about the same appearance having a more or less homogeneous grayish white color. They average a little less than 1 cm in diameter. The small node accompanying the spermatic vessels was also sectioned. Microscopical examination of sections of these various nodes fails to reveal any definite evidence of metastases from the primary testicular tumor but no detailed microscopical study was made of the whole gland area. This patient has been seen frequently. The axillary lymph node was drained and was apparently an inflammatory lymphadenitis unrelated to his testicular malignancy. When last seen on March 30, 1931, he was perfectly well without any abdominal discomfort or any palpable masses.

The application of radical surgery limited to distinct clinical groups as above outlined, in cancer of the prostate, genital tuberculosis and in tumors of the testis, offers a meager chance to reduce the ravages of these three diseases because of marked limitations of application. Nevertheless the advantages of these radical means of treatment should be recognized, that they may be applied when the rare opportunity to do so does present itself.

CLINIC OF DR WILLIAM B HOLDEN

FROM THE DEPARTMENT OF SURGERY, UNIVERSITY OF OREGON
MEDICAL SCHOOL

GANGRENOUS GALLBLADDER DUE TO VENOUS OBSTRUCTION

A woman age sixty four years was clinically a classical case of gallstones. Her last attack was of two weeks duration. We present this case for its unusual pathology and x ray findings. The accompanying flat plate (with out any dye) shows a large laminated gallstone and an oblong pear shaped shadow below the stone (Fig 357). This shadow was quite similar to that of a kidney. Though it was regarded as probably a gallbladder no explanation was given preoperatively for its prominence. Operation disclosed a gallbladder greatly distended with its fundus gangrenous. One large stone was so tightly wedged in the neck of the gallbladder that venous return was entirely shut off and the distended gallbladder was filled with blood from the venous obstruction. This blood accounted for the unusual flat x ray plate. Coils of intestine were adherent to the gangrenous gallbladder. A cholecystectomy was done and a perfect recovery followed.

Pathologic Report by Dr Warren Hunter—The gallbladder is very large measuring 11 cm in length and 5 cm in diameter. The external surface is roughened and reddish brown. The wall is from 5 to 7 mm in thickness and very wet. The lining in places is dark reddish while in others it is brownish. No mucosa is visible grossly. The single gallstone is unusually large measuring 3 by 4 by 4.5 cm and weighing 32 Gm.

Microscopical Examination—In sections nothing remains by which the gallbladder can be recognized by its histologic structure except for a little smooth muscle in its wall. The mucosa is entirely lacking. The entire wall is extremely edematous so that individual cells are widely separated from each other. In places hemorrhages are also present and scattered throughout the wall. Singly and in collections are goodly numbers of polymorpho-nuclears together with some lymphocytes and plasma cells. All blood vessels are dilated, some are empty—others engorged with blood. The pronounced edema, hemorrhage and evidence of vascular distention all speak for an interference with the blood supply with resultant beginning gangrene of the gall bladder.

Pathologic Diagnosis—Marked subacute cholecystitis. Obstruction of neck of gallbladder by a large gallstone with obstruction of blood supply and early gangrene. The accompanying skiagraph is self-explanatory (Fig 357).

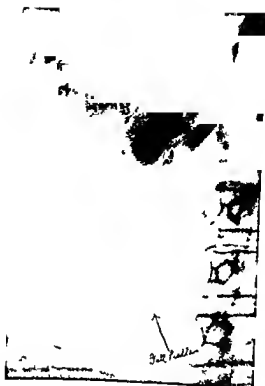


Fig 357 —Gallbladder filled with blood and large stone which caused the gangrene of the gallbladder by obstructing venous return

CALCIFIED WALL OF THE GALLBLADDER

Mrs F age fifty two years came under my care January 21 1931. Thirty years ago she had had a very severe attack of upper abdominal pain which confined her to her bed and required morphine for relief. For years she has experienced gastric distress, belching of gas and the usual clinical history of gallbladder disease. We present this case wholly because of the unusual pathologic changes in the wall of the gallbladder.



Fig. 358 —Shows circular shadow under the liver

X Rays by Dr. William Dixon showed a uniformly large circular shadow on the under surface of the liver (Fig. 358). A preoperative diagnosis of calcified gallbladder or possibly calcified cyst of the liver was made. The accompanying plate shows this shadow (Fig. 358). At operation the gall bladder was found to be of a very brittle consistency and the contents were

cholesterin and stones After the gallbladder was removed and emptied of its contents it retained its shape perfectly. Figure 359 is an x ray plate of the gallbladder wall and two of the stones. There was a general calcification of



Fig. 359—Shows calcified empty gallbladder wall

its entire wall. Pathologic diagnosis by Dr. Warren Hunter was: Chronic ulcerative cholecystitis with cholelithiasis, hyaline degeneration and calcification of gallbladder wall. Patient made a perfect recovery.

LARGE RECURRING RETROPERITONEAL LIPOMA

Mrs. R. age fifty eight years came under our observation January 13, 1931. He complained of a large right sided tumor. In 1917 a large 'fatty' abdominal tumor had been removed from this location. In 1925 a second 'fatty' tumor was taken from the same region. The patient says that the present tumor is in the same place as the other two and that he believes it to be another 'fatty' tumor. Except for the tumor the patient had no other complaints. His right hip was a little stiff and there is a slight discomfort on walking. His physical examination was negative except for this rather firm smooth mass which fills the right iliac fossa and right lumbar region, extending to nearly the midline of the abdomen. It was not tender.

Laboratory findings showed normal urine. Wassermann negative. hemoglobin, 73 per cent, red blood cells 3,770,000 white blood cells 6700. Pre-operative diagnosis. Fatty tumor possibly cancer.

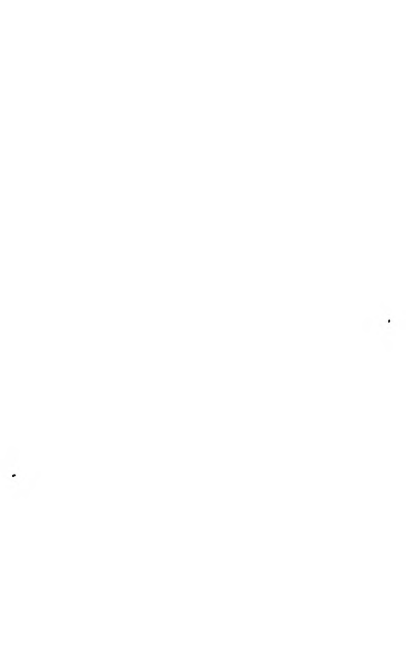
Under spinal anesthesia the abdomen was opened through the former incision. A large firm lobulated retrocecal fatty tumor was removed. The scars from the two previous operations had caused many very firm fibrous bands rendering the enucleation difficult. The tumor quite surrounded the right iliac vessels to their exit. The upper limit of the tumor was the under surface of the liver.

The recurrence of the tumor eight and five years after removal suggested the possibility of malignancy. Dr. Warren Hunter made a complete pathologic study. His conclusions were that this was a recurring retrocecal lipoma, not malignant and that the recurrence was probably due to incomplete removal at the previous operations. Whether we succeeded in getting it all at this time is unknown. Its situation and lobulated nature make it very easy to leave behind a portion of the tumor. Convalescence was uneventful.

A LARGE LIPOSARCOMA (THIRTY SEVEN AND A HALF POUNDS)

THIS woman age forty five years came to us nearly two years ago. Her abdomen was greatly distended by a mass which had been first noted about three years before on the left side below the navel. There had been no pain until the past few weeks when the mass began to enlarge rapidly and caused distress from its size. Except for this enormous enlargement of the abdomen the physical findings were negative. Laboratory findings with the exception of a slight secondary anemia also were negative. The preoperative diagnosis was a huge ovarian cyst. The postoperative diagnosis was probably a hypernephroma. The operation was difficult. The descending colon was only a thin narrow ribbon stretched over the anterior surface of the tumor and its identity was not easily established. The tumor was 45 by 35 by 35 cm. and weighed 37½ pounds. Dr. Warren Hunter's pathologic diagnosis: Large retroperitoneal liposarcoma.

• On February 10, 1931, the patient reported that she was in her usual good health. Lipoma rarely exhibits malignancy hence the excuse for presenting this case.



EPILEPSY OCCURRING TWENTY-ONE YEARS AFTER OPERATION FOR BRAIN ABSCESS

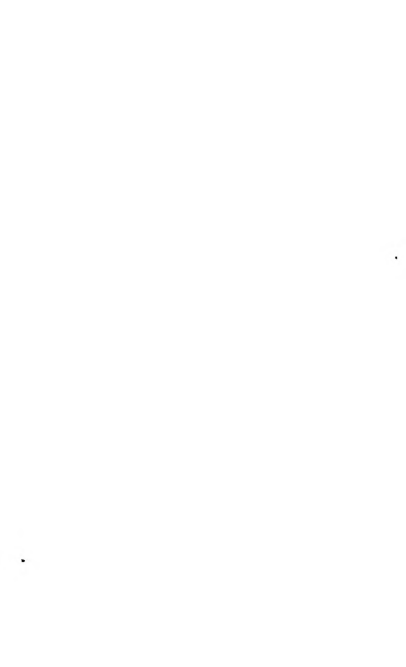
TWENTY FOUR years ago I operated on Mr. N. age thirty years for extradural abscess behind the left ear. One week later a cerebral abscess was drained in the left temporosphenoidal lobe. The origin of these abscesses was a mild otitis media. Before the second operation and for some weeks following the patient had considerable difficulty in remembering words especially nouns. He could not think of the noun 'feet'. He called his feet the things you walk with. His automobile was the thing you ride around in. He could not recognize the letters of the alphabet. In the course of a few months he made a perfect recovery. My experience in brain surgery has been small. This for over twenty years was regarded as my only entirely satisfactory brain case.

Mr. N. attended to his business affairs in a normal way. At intervals of every few years he was seen. He would complain of forgetting words and that he lacked self confidence. We regarded this forgetfulness as nothing more than is common to most of us, that he was a victim of inferiority complex and was supersensitive.

January 6 1931 Mr. N. reports: I have been able to get along fairly well but of late I seem to be an old man both physically and mentally. I am only fifty four so it surely is not age alone. Two years ago I had my first stroke of epilepsy lasting some thirty minutes at night. Since then I have had them about every three months at night. December 10th I had one at night and another the following day about 10 A. M.

In the past two years the patient has taken luminal but is failing mentally and has practically withdrawn from business. He feels keenly his embarrassing position.

The scars and adhesions following an abdominal operation may be annoying even to the extent of causing hernias and mechanical obstructions, but they do not destroy one's mentality. Cerebral scars have most serious possibilities and even after many years may be productive of grand mal, with all its attending woes. The difficulty in recalling words in the past fifteen or twenty years may have been petit mal.



CLINIC OF DRS EMILE HOLMAN AND JAMES K. SHEN

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THE APPLICATION OF THE MATAS PRINCIPLE OF ENDO- ANEURYSMORRHAPHY IN THE TREATMENT OF VARI- COSE ANEURYSM

It is generally agreed that the safest and most effective method of dealing with an arteriovenous fistula is quadruple ligation of proximal and distal artery and vein with excision of the fistula. One can then be certain that no collateral channels will open up to reactivate the fistula and to restore the local thrill and bruit. Moreover, as emphasized by Reid¹ and later by Holman² the remarkable development of a collateral circulation which usually accompanies the existence of a fistula may be safely relied upon to avert the dangers of gangrene beyond the fistula following ligation of the artery and vein. With reference to the reason for the development of this collateral circulation greater even than that which develops after the simple ligation of a main artery the most important factor would appear to be the area of lessened resistance to the flow of blood at the site of the fistula.³ It is this area of lessened resistance in the arterial tree that attracts blood to this site through all available channels including the collateral vessels. All avenues of approach to the fistula open up to appease, as it were, the thirst of the fistula, particularly if it is a large opening. The presence of such a large opening in the artery through which blood may flow without encountering the resistance presented by the capillary bed everywhere else in the body is, I believe, the most powerful and most important stimulus to the opening up of the collateral vessels.

Although the existence of an adequate collateral circulation usually permits ligation of the vessels and excision of the fistula, it cannot be argued that this is the "ideal" operation. The restoration of the vessels would in most instances be preferable and desirable and this the application of the Matas' principle of endo-aneurysmorrhaphy assures. It is a procedure however which is dependent upon the absence of degenerative changes in the vessels at the site of the fistula. Occasionally calcareous deposits occur in the tissues forming the rim of the longstanding fistula and in the presence of such calcification this procedure is inadvisable and impossible. The subsequent development of a simple fusiform aneurysm at the site of the repaired arterial wall has been known to occur, and should not be invited.

Endo aneurysmorrhaphy is also dependent upon one's ability to control completely all bleeding either by a tourniquet proximal to the lesion or by numerous well placed bulldog arterial clamps as described by Matas. The latter procedure is not usually possible except in the direct communication between artery and vein as in the aneurysmal varix. If the lesion is associated with a large false sac in the soft tissues, as in the varicose aneurysm endo aneurysmorrhaphy is in most instances only possible if a tourniquet can be applied to ensure an absolutely bloodless field. Given a bloodless field the operation is comparatively simple, and should be considered the operation of choice in the treatment of arteriovenous fistula if technically possible.

The following case illustrates the application of the Matas' principle in the restoration of the femoral artery and vein and in the obliteration of a large false sac in the soft tissues of the thigh.

Case I*—A

left thigh seven m
tissues of the thigh

vein Examination revealed a large pulsating mass the size of half a grapefruit situated on the anteromedial aspect of the left thigh just proximal to

* Cases I and II were operated upon by the authors at the Central Government Hospital at Nanking China through the courtesy of Dr J Heng Liu Minister of Health to China

Hunter's canal. Obliteration of the opening by direct pressure was not possible without great discomfort as the vessels and the opening between them lay deep to the pulsating tumor. The characteristic features of an arterio-

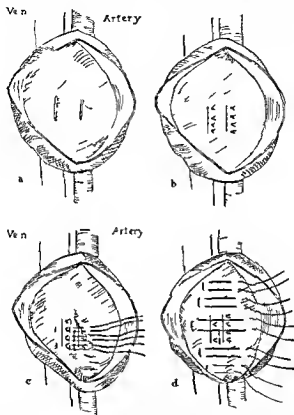


Fig. 360.—Varicose aneurysm of superficial femoral vessels cured by application of Matas principle of endoaneurysmorrhaphy. *a* Interior of sac as seen at operation showing two separate slit-like openings in artery and vein. Vessels collapsed due to tourniquet on thigh. *b* Application of internal end

half its original size. A longitudinal incision was made directly over the

tourniquet

The next morning a good pulse could be felt in the posterior tibial and dorsalis pedis arteries, and there was marked improvement in the color and warmth of the foot with a rapid subsidence of swelling. An uneventful recovery and complete cure of the aneurysm followed.

The above case illustrates the possibility, whenever a tourniquet may be applied, of cutting down boldly upon the false sac of a varicose aneurysm and exposing the rents in the vessels or, as originally suggested by Bickham,⁴ of cutting into the vein of an aneurysmal varix, suturing the rent in the artery transversely, reinforcing the first line of sutures by approximating over it the adjacent wall of the vein and ligating the vein proximally and distally to the line of sutures. The application of the Matas principle is always *desirable* whenever feasible, and may be *imperative* when the aneurysm lies in the popliteal region. It provides a means not only of restoring injured vessels, but also, by its simplicity of performance, it avoids the extensive dissection of tissues which is unavoidable when excision of the fistulous tract is attempted, and which usually results in the unfortunate interruption of important collateral vessels traversing the dissected tissues. The principle of endoaneurysmorrhaphy as originally utilized by Matas in the treatment of

the simple aneurysm and subsequently applied by Bickham to the treatment of an arteriovenous fistula deserves a wider application than has been heretofore recorded in the treatment of the varicose aneurysm and the aneurysmal varix

Its application is not always feasible, however, as illustrated by the following example of an arteriovenous communication associated also with a false aneurysmal sac

Case II—A young Chinese soldier suffered a bullet wound of the right thigh just below Poupart's ligament some four months previous to my examination which revealed a large deep seated pulsating tumor in the tissues and muscles of the lateral half of the thigh. The femoral artery was easily palpated just below Poupart's ligament and exhibited more prominent pulsation than the left femoral artery. About 2 cm. below the inguinal ligament an intense continuous thrill and bruit were present which could be eliminated by deep pressure over this point. There was slight pulsation in the posterior tibial artery and the tissues of the lower thigh and leg appeared normal with however a little swelling of the thigh. Obliteration of the opening by digital pressure of the femoral artery was followed immediately by the fall in pulse rate from 87 to 68 and by disappearance of the pulsating tumor in the lateral tissues of the thigh.

At operation which was performed of necessity without the aid of a tourniquet the inguinal ligament was mobilized and displaced upward revealing the external iliac artery and vein. These vessels appeared half again

opening of the deep femoral branch. The difficulty of controlling all feeding vessels particularly the branches of the deep femoral artery precluded the possibility of closing the rent by the transvenous route. Accordingly the fistula was excised severing the various branches in succession between ligatures. The common femoral vessels were divided proximal to the opening and the superficial and deep femoral together with the lateral and medial

numbness or pain but after twelve hours it was again warm and of fair color. An uneventful recovery followed with complete cure of the aneurysm.

It is highly instructive that in this instance it was possible to ligate the common, superficial, and deep femoral arteries

pulsating mass was thin and the pulsating tumor lay terrifyingly close to the surface. No pulsations could be made out distal to the aneurysm and the

aneurysm from which was evacuated about 60 cc. of fluid blood revealing an endothelial lined sac with two apertures at the bottom one opening from the artery about 1.5 cm. long the other 1.8 cm. removed opening into the vein. The rent in the artery was closed with interrupted mattress sutures of silk penetrating the tissues deeply so as to include the wall of the artery itself. The rent in the vein about 1.6 cm. long was closed in similar manner with a single layer of sutures. The tourniquet was released temporarily to determine whether the rent in the artery was securely enough closed. A rather brisk bleeding from the suture line necessitated reapplication of the tourniquet and reinforcing the previously applied sutures in the artery. This was accomplished by interrupted sutures placed in the endothelial lined wall of the sac close to the previous sutures (Fig. 360 c). The walls of the sac were further imbricated and plicated with additional continuous sutures of silk until the entire cavity was obliterated. No bleeding occurred on removal of the tourniquet.

The next morning a good pulse could be felt in the posterior tibial and dorsalis pedis arteries and there was marked improvement in the color and warmth of the foot with a rapid subsidence of swelling. An uneventful recovery and complete cure of the aneurysm followed.

The above case illustrates the possibility, whenever a tourniquet may be applied, of cutting down boldly upon the false sac of a varicose aneurysm and exposing the rents in the vessels, or, as originally suggested by Bickham,⁴ of cutting into the vein of an aneurysmal varix, suturing the rent in the artery transvenously, reinforcing the first line of sutures by approximating over it the adjacent wall of the vein and ligating the vein proximally and distally to the line of sutures. The application of the Matas principle is always *desirable*, whenever feasible and may be *imperative* when the aneurysm lies in the popliteal region. It provides a means not only of restoring injured vessels, but also, by its simplicity of performance, it avoids the extensive dissection of tissues which is unavoidable when excision of the fistulous tract is attempted, and which usually results in the unfortunate interruption of important collateral vessels traversing the dissected tissues. The principle of endoaneurysmorrhaphy as originally utilized by Matas in the treatment of

femoral is ligated the anastomotic circulation is largely developed through the internal pudic the gluteal and sciatic arteries all branches of the internal iliac or hypogastric artery communicating with the medial circumflex and first perforating branches of the deep femoral artery Also to a lesser extent the deep circumflex iliac artery branch of the external iliac artery communicates with the lateral circumflex artery a branch of the deep femoral (Fig 361) When the superficial femoral artery is ligated just beyond the emergence of the deep femoral little apprehension for the life of the limb is felt due to the adequacy of the deep femoral artery Through its circumflex and perforating branches and their communications with the anastomotica magna about the knee the deep femoral artery usually provides an excellent blood supply to the leg and foot (Fig 362 2)

When however the continuation of the superficial femoral is ligated further on in the popliteal space conditions remain practically the same and one might expect the same development of collateral circulation through the deep femoral and anastomotica magna vessels However experience indicates that gangrene is more imminent following ligation of the popliteal than following ligation of the superficial femoral It would appear therefore that when the arterial force is routed directly into the deep femoral branch it is more likely to open up the collateral vessels of this artery than when part of the arterial force is dissipated in the arterial segment of the superficial femoral between y and x following ligation of the artery at x This factor probably explains the observation of Reichert and Lewis that in certain cases of thrombo angitis obliterans ligation of the superficial femoral improves the anastomotic circulation through the deep femoral artery This improvement probably depends upon removing from the circulation that segment of superficial femoral artery proximal to a thrombosis in which arterial pressure is dissipated without exerting any influence upon anastomotic channels If the thrombus has extended practically as high as the deep femoral branch ligation of the superficial femoral artery can be of no value

without gangrene and without more evidence of impaired circulation than a pale cool limb for a few hours. These three arteries were ligated after considerable hesitation but due to the conditions encountered in the course of the operation it was the only possible procedure. It is extremely doubtful whether under ordinary circumstances ligation of these three arteries could be essayed without great risk of gangrene. The

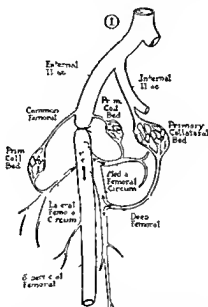


Fig. 361 —1 Schema of circulation following ligation of common femoral artery. blood enters superficial femoral largely through the deep femoral artery and its anastomoses thus being the first large branch beyond the ligation.

absence of gangrene in this instance provides an excellent illustration of the powerful stimulus to the development of a collateral circulation furnished by an arteriovenous fistula.

It is interesting to compare the probable collateral beds following the ligation of arteries in this region. When the common

When the common, superficial, and deep femoral arteries are ligated, there is grave cause for concern for the nutrition of the limb. In these circumstances the blood must needs pass not only through a *primary* collateral bed of the upper thigh, but through a *secondary* collateral bed about the knee before it reaches the tissues below the popliteal space (Fig. 362, 3). Presumably in this instance, the stimulus to collateral circulation provided by the fistula had already opened up the primary collateral bed, which made possible the opening up of the secondary collateral bed following the ligation of the three femoral vessels. Only by this assumption can one explain the absence of gangrene in this instance. Ordinarily it is highly important to keep in mind the necessity of preserving the main branch immediately below a proposed ligation for it is through this branch that the collateral vessels provide the necessary circulation. If it is imperative to ligate this branch there arises the necessity of opening up not only a primary collateral bed, but also a *secondary* collateral bed, and it is this fact which is so uncertain. When the arterial pressure provided through the primary collateral bed is insufficient to open up the secondary collateral bed gangrene is inevitable.

SUMMARY

Whenever technically possible restoration of the vessels by the application of the Vatas principle of endo aneurysmorrhaphy should be the operation of choice in the treatment both of the aneurysmal varix and the varicose aneurysm.

Ligation of the vessels with excision of the fistulous communication may, however, be resorted to if necessary usually without grave danger of gangrene due to the extraordinary stimulus to the development of collateral vessels provided by the area of lessened resistance to the flow of blood at the site of the fistula.

As illustrative of this stimulus an example is given in which the common, superficial and deep femoral arteries together with the accompanying veins were ligated for a femoral fistula without the slightest evidence of peripheral gangrene.

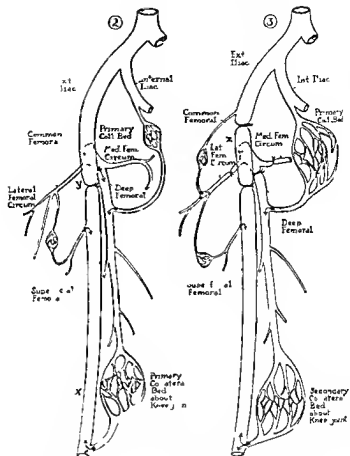


FIG. 362—2 Schema of circulation following ligation of the superficial femoral artery. When ligation is performed just distal to the branching of

CLINIC OF DR O W JONES, JR

FROM THE DEPARTMENT OF NEUROSURGERY, UNIVERSITY OF
CALIFORNIA MEDICAL SCHOOL

LATE TRAUMATIC APOPLEXY REPORT OF A CASE WITH OPERATIVE RECOVERY

As early as 1891 Bollinger¹ described a condition called Spatapoplexie and reported 4 cases. In brief his theory based on the experimental work of Duret² on cerebral concussion was as follows. Following a head injury degenerative changes softening and necrosis take place in the region of the fourth ventricle and aqueduct of Sylvius and to a lesser extent in the cerebrum. Alteration in the walls of the blood vessels in these areas finally results in rupture of the vessels with hemorrhage into the softened area and death.

Subsequently many cases were reported. In 1903 Langerhans³ collected from the literature 19 cases of late traumatic apoplexy. He severely criticized Bollinger's theory and concluded that no satisfactory pathologic explanation had been presented in the cases reported to show how normal vessels could be so affected by trauma. Furthermore he considered hemorrhage into foci of softening to be very unusual. He agreed however that trauma is an etiologic factor in cases of late brain hemorrhage and that in all probability the vessels are damaged at the time of injury and not secondarily.

Although the term *late traumatic apoplexy* originally applied to cases showing central brain bleeding in the brain stem later it was used in all cases of central brain bleeding whether in the brain stem or cerebrum. Because of the loose definition of the term *apoplexy* considerable confusion has arisen in regard to the classification of cases of late traumatic apoplexy and a wide variety of cases has been included under this heading. It is generally accepted however that the term should apply only

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Over the next four days the patient gradually regained consciousness and infrequent movement of the right upper extremity was noted. He had a complete aphasia retaining only one word—yes.

February 15th Right hemiplegia and hemihypesthesia involving face, arm and leg developed. Deep reflexes were hyperactive on the right and the Babinski was positive on the right. The fundi remained within normal limits. x Rays were negative for any evidence of fracture. Although the patient's state of consciousness remained unchanged there had been a very definite progression of neurological signs.

Diagnosis—Intracerebral hemorrhage.

Operation—February 16th under local anesthesia a left subtemporal decompression was made. The dura was tense and dark blue. When opened, there escaped considerable yellow fluid and old, thick, tarry blood. In the posterior superior portion of the temporal lobe could be seen the point at which the intracerebral hemorrhage had ruptured through the cortex to become subdural. The rupture in the cortex was 1.5 cm in diameter and opened into a large subcortical cavity. The patient coughed and considerable old clotted blood was forced out through the cortical opening. The cavity was irrigated with Ringer's solution and the scalp was closed with drainage.

Improvement was gradual and on discharge from the hospital six weeks after operation, the patient was walking about and the aphasia was improved definitely.

At the present time February 27 1931 the patient is doing light work. Aphasia has cleared but he still has a slight spastic right hemiparesis.

In view of the positive spinal fluid in this case, one might conclude that cerebral vessel changes were present prior to the injury and, therefore, that this cannot be considered a typical case of late traumatic apoplexy. On the other hand, the close relationship of the injury to the onset of symptoms, the absence of any definite evidence of preexisting cerebral vascular changes associated with a typical clinical picture, and operative findings comparable to those in similar cases, are points in favor of so classifying this case.

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to cases of central brain hemorrhage in which there is a history of head injury with or without loss of consciousness with a latent period varying from one day to eight weeks between injury and hemorrhage

In their relation to industrial accidents it has been usual to regard such cases of large solitary intracerebral hemorrhage as having been of spontaneous origin especially when they occur in elderly persons. However even in old persons with some vascular changes a history of head injury either slight or severe followed by a short latent period during which head symptoms may or may not be present must be considered of great significance in the presence of intracerebral hemorrhage. In such cases as well as in those of young persons trauma must be considered to bear a direct relation to the hemorrhage.

Operative interference in cases of late traumatic apoplexy has given satisfactory results with the exception that epilepsy may be a late complication a patient whose case we reported previously developed petit mal attacks three years after injury.

In a previous article on this subject¹ 3 cases were reported. Since this time another similar case has come under observation.

Case Report—P. R. Ame can teamster aged forty one years. Past history of venereal disease denied. On February 9, 1930 while on ox sled

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ENDOJEJUNAL MYOMA

BENIGN neoplasms of the intestinal tract are rare. They include adenoma, fibroma, lipoma, fibromyoma, neurofibroma, fibroadenoma, angioma, myoma, teratoma, etc. They occur more frequently in the large than in the small intestine. As would be expected, myoma is more commonly encountered than any other type.

The symptoms of benign tumor of the intestine will depend upon its location and its size. The very small tumors, regardless of their location, may cause no symptoms. The larger ones may cause only irritative symptoms such as indigestion with belching, irritable colon, tenesmus (if low in the intestinal canal), or discharge of blood or bloody mucus, or the tumor may cause partial or complete obstruction with their characteristic signs. Also the symptoms will vary with the position of the tumor, i. e., whether growing into the lumen of the gut or toward its periphery. The importance of the x-ray examination in many of these cases cannot be overestimated. In our case the x-ray showed dilatation of the duodenum with six hour stasis, upon which the diagnosis of partial obstruction was based. It is common knowledge that the pedunculated tumors may cause intussusception.

Mrs. H., aged fifty years, entered Cedars of Lebanon Hospital May 27, 1930, complaining of (1) vomiting, (2) weakness, (3) pain in epigastrium, (4) tarry stools. Family history was unimportant as was the previous history with the exception of having had a hysterectomy and appendectomy done at thirty.

Present Illness. Fifteen years ago she began having severe headaches associated with pain in the epigastrium. She felt nauseated during these

which was similar to her previous attacks, but following this one she began passing copious tarry stools and was taken to the Kaspare Cohn Hospital very nearly exsanguinated

Physical examination showed an apathetic, poorly nourished, pale woman with dry skin, and pale mucous membrane. Heart and lungs were normal. Blood pressure 125/65. Abdomen protuberant, soft, slight tender

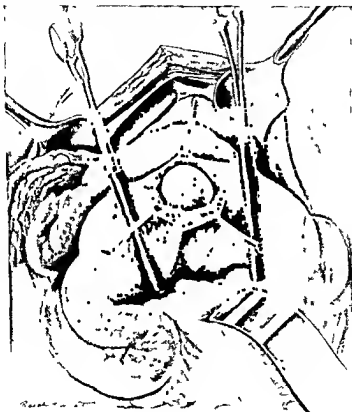


Fig 364

showed constant blood examination on the stool. Sigmoidoscopic examination was negative. x Ray

attacks but would induce vomiting after which she felt somewhat relieved. She always felt weakened after these attacks and sometimes had to remain in bed for several days. She noticed no changes in the color of her stools at that time. The attacks occurred about once a month and gradually became more frequent. Ten years ago she consulted a doctor who studied her very thoroughly, including G-I series, and told her that she had had tonsils and



Fig. 363

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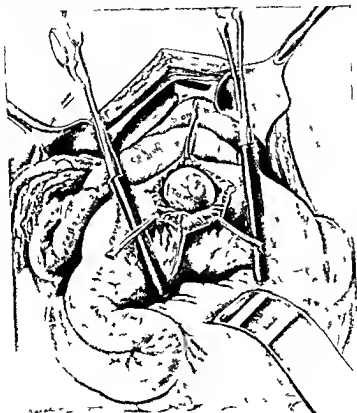


Fig 364

ness throughout most marked in upper half. No masses felt. Hemoglobin 46 per cent. 3,000,000 reds. 6400 whites with normal differential and urine normal. Several stool examinations during the first week of observation showed constant blood. Sigmoidoscopic examination was negative. x Ray examination showed no defect in the stomach nor duodenal outline but did show a 4 x hour residue in the pylorus and bulb and also a dilatation of the bulb and second and third portions of the duodenum to twice the normal size,

and stasis in the terminal ileum. On June 7th her hemoglobin was 2 per cent and 1 730 000 reds.

Having in mind the two cardinal symptoms in this case—that is, dilatation of the duodenum and hemorrhage appearing in the stool—a diagnosis of tumor of the jejunum with probable ulceration was made.

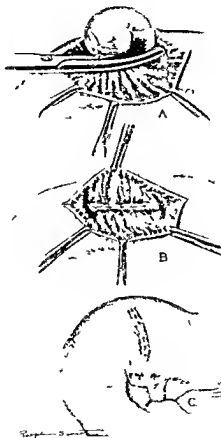


Fig. 36a

June 9th On
On June 16th

The abdomen was opened by a right paramedian incision retracting the rectus muscle laterally. The stomach and pylorus were normal. The duodenum showed a moderate degree of dilatation. No pathology about the duodenojejunal junction and no constriction of the duodenum by the vessels. Adhesions about the distal ileum and cecum were released by sharp dissection. A smooth round mass about the size of an English walnut was felt within the lumen of the jejunum about 10 inches from the ligament of Treitz (Fig 363). After milking the intestinal contents away from the area occupied by the tumor an intestinal clamp was placed on the jejunum above the tumor and another below to prevent soiling. The intestine was then opened over the tumor by a longitudinal incision (Fig 364). The mass was found to be a myoma with a broad base. The base was clamped and the tumor cut off above the clamp. A chromic No. 0 suture replaced the clamp and the longitudinal incision in the anterior wall of the gut was closed transversely to its axis with a double row of continuous chromic No. 0 suture (Fig 365). There was no constriction of the bowel after closure, the lumen admitting two fingers. Abdominal wound closed in three layers: continuous chromic No. 2 for peritoneum and posterior fascia, three figure of 8 dermals and continuous chromic No. 2 for anterior fascia and continuous interlocking horsehair for the skin.

Pathologist's Report. Tumor of jejunum. The specimen is a moderately firm globoid mass which is 2.5 cm in diameter. It is almost completely covered with thin rugated mucous membrane. Over one surface the mucosa is superficially ulcerated. The base of the ulcer is necrotic. Opposite to this portion there is an area 1 cm in diameter which is denuded of mucosa. This is evidently the point of attachment. The cut surface is gray and translucent in appearance.

Microscopical. Sections show a tumor made up of interlacing bundles of smooth muscle cells separated by thin strands of connective tissue. At the base a small bit of normal striated muscle was seen. The covering mucous membrane is normal except for the ulceration. The tumor cells are uniform in size, shape and staining characteristics. There is no evidence of any malignancy. Diagnosis: Myoma.

Subsequent Note. Uneventful recovery. October 16, 1930, hemoglobin 6 per cent, reds 4,400,000 and she looks and feels well.

and stasis in the terminal ileum. On June 10th her hemoglobin was 27 per cent and 1,300,000 reds.

Having in mind the two cardinal symptoms in this case—that is, dilatation of the duodenum and hemorrhage appearing in the stool—a diagnosis of tumor of the jejunum with probable ulceration was made.

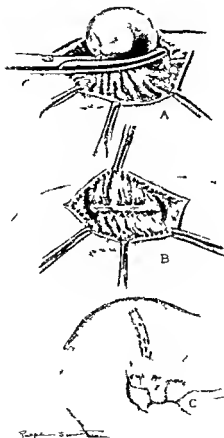


Fig. 363

On June 9th On
On June 16th

ENDOMETRIOSIS OF THE ILEUM

THE etiology of ectopic endometrial growth has been the subject of much controversy and various theories have been advanced to explain its occurrence. Babes in 1882 reported a case of intramural myoma containing cysts which were lined by epithelium. He in common with the subsequent supporters of his theory attributed the presence of glandular tissue in these tumors to inclusions of müllerian rests. Adenomyoma of the round ligament and fallopian tubes and endometrium found in the tube ovary inguinal region umbilicus etc have been similarly explained but as yet no satisfactory explanation of such displacement has been advanced. In 1896 von Recklinghausen in writing of adenomyoma of the uterus and tubes ascribed their origin in most cases to the adult remains of the wolffian tubules. In 1903 Cullen demonstrated that the glandular inclusions in uterine adenomyoma were due to an invasion of the myometrium by the mucosa thus disproving the wolffian theory of von Recklinghausen. In 1898 Ivanoff claimed that the cystic spaces in fibromyoma originated in some cases from ingrowing processes of peritoneum. Later Meyer demonstrated that epithelial heterotopy can occur in the serosa and claimed it was a healing process excited by inflammation. This heterotopy or metaplasia theory has had many supporters but recently some of these including Meyer have been inclined to the implantation theory of Sampson. In addition there are two lymphatic theories the one of Holbon who believes the endometrial cells gain the site of the ectopic growth by transportation through the lymphatic channels and that of Schüller who attributes the growth to a metaplasia of the endothelial lining of lymph spaces.

Finally there remains the implantation theory of Sampson. In 1921 Sampson published his first paper on perforating hemorrhagic (chocolate) cysts of the ovary in which he showed conclusively that they were hematomata of endometrial origin.

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though it is to be remembered that Pick also recognized their endometrial character in 1905. Sampson maintains that uterine or tubal epithelium at times during menstruation escapes into the peritoneal cavity through the tubes. This regurgitated menstrual secretion finds lodgement on the ovary or adjacent tissue such as the intestine and pelvic peritoneum particularly the culdesac. The endometrium has the ability to penetrate surfaces on which it finds lodgement and with continued growth adenomata may develop wherever the epithelium falls on suitable soil. Implantations may occur only on the ovary or on both ovary and pelvic peritoneum or on visceral or parietal peritoneum alone. The adenomata so formed react to menstruation and especially in the ovary may develop into hematomata by retention of menstrual blood. Such hematomata may remain superficial in which case they are recognized as minute red or purple elevations on the surface of the ovary the color depending upon their age and the period of the menstrual cycle. There may be however a deep invasion of the ovary with the formation of cysts of varying size which contain the typical chocolate fluid. Sooner or later the increased tension of the contained blood causes rupture of the cyst wall with dissemination of its contents and a portion of the endometrial lining to adjacent structures. Thereby fresh implantations arise which pass through the same process. Such secondary implantations are found in the culdesac the rectovaginal septum the sigmoid the appendix the cecum the ileum the uterus tubes and parietal peritoneum. Dense adhesions form around the site of perforation. Sampson has also demonstrated that endometrial cells can and do metastasize through lymph channels and through the venous channels. This metastatic theory would best explain inguinal and intrabgamentary endometriosis. Novak has contended that the small intramural portion of the tube would not allow the passage of endometrial tissue and further that the bits of endometrial tissue cast off during menstruation are composed of nonviable cells. He denied their power to grow after implantation. It is well recognized that many papillary carcinomas of the ovary look like the papillary adenocarcinoma

of the fundus uteri. In cases of adenocarcinoma of the fundus uteri Sampson has found histologically alive fragments of the tumor in the tube following curettage. It would seem that if the tube is large enough to permit the passage of malignant cells that it is large enough for the transportation of normal cells. Also Cron and Gey were able to grow human endometrium in tissue cultures. They used the fragments of epithelium normally found in the menstrual flow and obtained viable cultures. It appears to me that whereas an occasional case may be satisfactorily explained by some other theory still the great majority are more rationally explained by Sampson's implantation theory or his metastatic theory.

Endometrial growths may occur in the umbilicus or in laparotomy scars inguinal region rectovaginal septum round ligament ovaries tubes pelvic peritoneum and intestines. It will be noted that these growths are found in or adjacent to the pelvis.

The different sites of these tumors make for a variety of symptoms dependent upon location extent of the lesion whether or not adjoining structures are invaded and the nature of complicating conditions. Ectopic endometrium reacts to menstruation exactly as does the uterine mucosa thus the chief complaint may be present only at catamenia or may be more pronounced at that period. For example invasion of the rectovaginal septum with encroachment on the bowel gives rise to pain and occasionally bleeding coincident with menstruation. Adenoma of the umbilicus growths in laparotomy scars and in the groin are characterized by pain and swelling at the menstrual period.

The treatment will of course vary with the location and extent of the endometrial invasion. Adenomata of the umbilicus or of a laparotomy scar or of the groin are best treated by excision. The small ovarian adenomata may be safely excised leaving a good portion of the ovary. As endometriosis occurs in comparatively young women in whom ovarian conservation is desirable one would hesitate to perform a double oophorectomy unless the involvement were very extensive and bilateral. Extensive involvement of the intestine or of the rectovaginal septum may best be treated by double oophorectomy, which

will usually effect a cure, as the lesions of endometriosis are dependent upon ovarian activity, and with the cessation of ovarian function atrophy of the tumor ensues

Miss P., aged thirty six years single consulted us September 8 1930

lasted only one day

Present Illness In May, 1930 she had an acute cold with general body aches which was said to be influenza. A week later while recovering from this she began having generalized abdominal pain and a feeling of being full of gas. It hurt her to lie on her right side but she does not recall any localization of her pain. She took cathartics and in a week had recovered from this attack. She remained well until July 5th when she had a sudden pain in her abdomen so severe that she went to bed at once and applied heat. The pain was generalized in the abdomen for the first day and then seemed to localize in the right lower quadrant. She vomited three times. Her entire abdomen remained somewhat tender. This attack confined her to her bed for three weeks. Her doctor told her she had intestinal influenza. From July to September she had occasional attacks of moderate pain in the right lower quadrant lasting from a few minutes to a few hours. None of these attacks occurred at catamenial period and she does not know whether or not she had fever with any of the attacks. Of late she feels tired much of the time and takes some agar oil for her bowels. Prior to two months ago her bowels were regular.

Menstrual History Catamenia began at the age of thirteen. She has always flowed profusely and periods have always occurred at twenty-one day intervals. At present she flows eight days and uses twenty four pads in all. No dysmenorrhea.

Physical Examination Well nourished and well-developed woman of stated age. It is not necessary to record all the details of this examination but it is sufficient to state that the only abnormal finding was definite tenderness over the cecal region. Gastro-intestinal x ray showed only tenderness in the ileocecal region and the cecum was movable. The appendix was not visualized. Urine and blood examination showed no departure from normal. A diagnosis of chronic appendicitis was made.

She was operated on September 22 1930. A right pararectus incision with displacement of the rectus muscle mesially opened the abdomen. The end of the cecum and about 3 inches of the distal ileum were adherent to the

contained a very small bilocular cyst. Right ovary was adherent to the posterior pelvic wall by light adhesions and these were easily separated with the fingers and the ovary released. The appendix was then removed by a little sharp dissection and stripping it out of the cecal wall. A few ties of No. 0 gut were applied to bleeding points in the cecum. We then directed our attention to a mass which involved the distal 3 inches of the ileum. It was hard and felt like scar tissue involving the entire circumference of the gut. A few milium grayish white nodules were seen on the surface of the

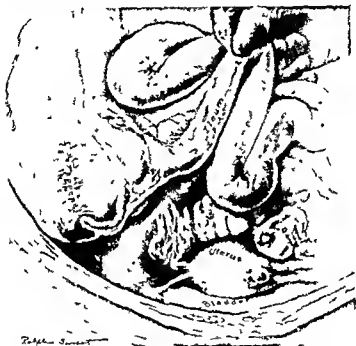


Fig. 166.—Endometriosis of the ileum. Appearance during operation.

ileum. The distal end of the ileum was resected and a lateral anastomosis between ileum and cecum performed. The abdominal wound was sutured in three layers.

Brem, Zeiler and Hammack, Pathologic Laboratory reported: A 9 cm. segment of ileum which has been opened. Near one end there is a constriction extending almost completely around it. The peritoneum at this point is thickened and ragged. The wall is greatly thickened but the lining is intact. *Microscopical*: The wall at the constricted portion is greatly thickened, especially the longitudinal muscle layer which is hyperplastic. Embedded in the wall are several nests of irregular glandular formations lined

by columnar cells. Some few of these spaces contain red blood cells. These formations resemble endometrial glands and are surrounded by groups of endometrial stroma cells. The lining is intact. No evidence of any malignancy. *Diagnosis:* Endometriosis of ileum.



Fig. 367—Section of glandular nest from wall of ileum.

Subsequent Note: x Ray pictures taken November 5, 1930, show a normally functioning intestinal tract. Pelvic examination on February 5, 1931, fails to reveal any abnormality, and on this day she reported that she was feeling fine and was practically symptomless.

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NECK METASTASES FROM LIP AND MOUTH CANCER

WHETHER cervical metastases from lip or mouth cancer should be treated surgically or by some form of radiation or both is still, perhaps, an unsettled question. At Stockholm¹ cases are divided into three groups and treated as follows:

1 Early cases—no glands demonstrably involved—the regional glands are treated by external radium exposure and watched. If glands become enlarged, the same radiation is repeated and this is followed by surgical dissection.

2 Moderately later cases—glands enlarged but discrete and freely movable—treated with external radium exposure followed by surgical dissection.

3 Late cases—glands enlarged and fixed; i. e., growth breaking through capsule—treated by radiation alone, not operated.

At the Memorial Hospital in New York City the plan of attack is very similar,² the screening used being not so heavy and the dosage in milligram hours therefore not so high, but the principles underlying the selection of cases and the choice of methods of treatment are substantially the same.

At both institutions radium element is preferred with heavy screening (2 to 3 mm of lead at Stockholm, 2 mm of brass at New York), exposed at a distance of 4 to 6 cm from the skin, the dosage of one application ranging from 12,000 to 14,000 mg hours (New York) to 20,000 to 30,000 mg hours at Stockholm.

¹ The Technic at Radumhemmet in the Treatment of Tumors. Beren Acta Radiol., x 1929, pp 1-48.

² Pilueger O H. Personal communication.

This represents possibly the best in radium technic at the present time but there are few institutions in the world possessing radium element in sufficient amount to make the routine use of such dosage feasible. And where radon seeds or radium needles buried in tumor tissue must be employed it is urgently important to recognize even more clearly the limitations of these forms of treatment. We are presenting the cases recorded here with this particular point in view.

Case I represents a submaxillary metastasis fixed to the jaw which was reduced four fifths in size and freed from the jaw (rendered much more readily operable) by implantation of emanation seeds. Yet when the submaxillary mass was removed at surgical dissection of the neck it was found to contain three lymph nodes in close apposition to each other, one uninvolved one in which the cancer has been apparently completely destroyed by the radium and one containing living active cancer apparently uninfluenced by radium. Yet in the implantation of radium emanations every effort had been made to secure uniform effect throughout the mass.

The lesson that this and similar cases teach is that while radium in this form may be extremely useful in reducing the size of metastases freeing fixation and very probably making operation safer and more sure it cannot be depended upon to reach all tumor cells and surgical dissection should be carried out.

That cure may be accomplished by a combination of radium therapy and surgery is illustrated by Case II. This patient presented a picture similar to Case I—a large fixed submaxillary metastatic mass. Here both radium and operative treatment were carried out at the same time radium seeds being implanted in the surgical wound after dissection. At the present time we would proceed as in Case I—secure the effect of radium first, then operate. This patient is however well more than five years after treatment.

CASE HISTORIES

Case I—Male fifty seven years. Two years ago a cancer of the lower lip right side was excised surgically. (Not at this clinic and pathologic material not available.)

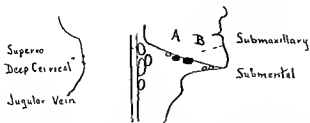


Fig 368—Case I Lymph glands removed at operation Only glands blocked in black were found involved A Contained cancer killed by previous radium treatment B contained living cancer



Fig 369—Case I Photomicrograph of section from gland marked A, Fig 368 The cancer is entirely necrotic from previous radium treatment

Eighteen months ago a squamous-cell carcinoma of the buccal surface of the right cheek was treated by one of us (L. R. T.) with radium and electrodesiccation at intervals over a period of six months—healed and has remained healed since

This represents possibly the best in radium technic at the present time, but there are few institutions in the world possessing radium element in sufficient amount to make the routine use of such dosage feasible. And where radon seeds or radium needles buried in tumor tissue must be employed it is urgently important to recognize even more clearly the limitations of these forms of treatment. We are presenting the cases recorded here with this particular point in view.

Case I represents a submaxillary metastasis fixed to the jaw which was reduced four fifths in size and freed from the jaw (rendered much more readily operable) by implantation of emanation seeds. Yet when the submaxillary mass was removed at surgical dissection of the neck, it was found to contain three lymph nodes in close apposition to each other, one uninvolved one in which the cancer has been apparently completely destroyed by the radium and one containing living, active cancer apparently uninfluenced by radium. Yet in the implantation of radium emanations every effort had been made to secure uniform effect throughout the mass.

The lesson that this and similar cases teach is that while radium in this form may be extremely useful in reducing the size of metastases, freeing fixation and very probably making operation safer and more sure, it cannot be depended upon to reach all tumor cells and surgical dissection should be carried out.

That cure may be accomplished by a combination of radium therapy and surgery is illustrated by Case II. This patient presented a picture similar to Case I—a large fixed submaxillary metastatic mass. Here both radium and operative treatment were carried out at the same time, radium seeds being implanted in the surgical wound after dissection. At the present time, we would proceed as in Case I—secure the effect of radium first then operate. This patient is however well more than five years after treatment.

CASE HISTORIES

Case I—Male, fifty seven years. Two years ago a cancer of the lower lip right side was excised surgically. (Not at this time and pathologic material not available.)



Fig 368—Case 1 Lymph glands removed at operation Only glands blocked in black were found involved A Contained cancer killed by previous radium treatment B contained living cancer

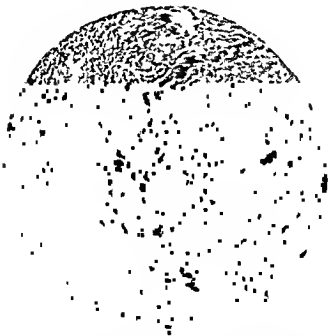


Fig 369—Case 1 Photomicrograph of section from gland marked A Fig 368 The cancer is entirely necrotic from previous radium treatment

Eighteen months ago a squamous-cell carcinoma of the buccal surface of the right cheek was treated by one of us (L. R. T.) with radium and electrocoagulation at intervals over a period of six months—healed and has remained healed since

Three months ago he presented himself with a walnut sized submaxillary mass adherent to the right mandible. At that time five gold seeds total 7.5 millicuries were implanted into the mass.

During the three months since this treatment the mass has gone down four fifths in size and has become movable on the jaw.

At operation the extent of glandular dissection is shown in Fig. 368 the submental groups on both sides, the submaxillary and upper deep cer-

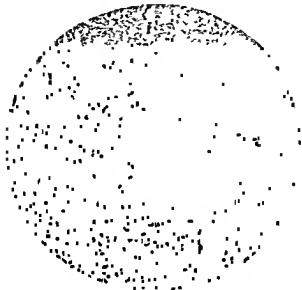


Fig. 370—Case I. Photomicrograph of section from gland marked B (Fig. 368). The cancer has been apparently uninfluenced by radium.

vical groups as far as the omohyoid being removed. Dissection was not carried farther since no glands except those in the submaxillary group were grossly involved.

Microscopical examination showed no involvement of submentals or upper deep cervicals. Three submaxillary lymph nodes were identified: one not involved, one (Fig. 369) containing cancer apparently completely necrotic from radium, and one adjoining node (Fig. 370) presenting living cancer apparently uninfluenced by the radium.

Case II—Male, forty-one years. First seen three years before operation at which time he had a cancer of the lower lip $\frac{3}{4}$ by 2.5 cm. in extent, deeply indurated. This was treated by surface application of radium plaques over

a period of two months healed and remained healed. At the same time a course of deep x ray therapy was given over the regional lymphatics.

Three years after this treatment he presented himself with a walnut sized submaxillary mass adherent to the mandible.



Fig. 371—Case II. Photograph of patient at time of first treatment.

A cautery resection of the lymph glands including both submental groups, the right submaxillary and upper deep cervical groups was done; no glands being involved except the submaxillary group. Seven glass seeds, total 5.6 mc., were inserted in the surgical wound.

Well five years after operation.

CLINIC OF DR O F LAMSON

SWEDISH HOSPITAL SEATTLE WASHINGTON

MESENTERIC LYMPHADENITIS AND ACUTE APPENDICITIS

THE patient is a young girl of nine years of age who for the past two years has been having occasional attacks of abdominal pain in the right

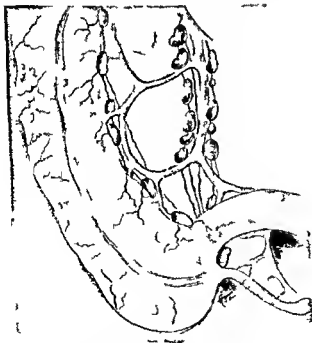


Fig 372—Mesenteric lymphadenitis

ac fossa associated with nausea and vomiting. No rise in temperature was noted until the present attack.

Present Complaint—About thirty six hours ago she was taken with rather severe pain in epigastrium which finally localized in the right lower quadrant

Examination—She is rather tall for her age and somewhat pale in appearance. Examination of the abdomen revealed marked tenderness at McBurney's point. Temperature 101 F leucocytes 16 000. Diagnosis Acute appendicitis

Operation—We made a right rectus incision and found the appendix acutely inflamed and at the base the glands were considerably enlarged

Pathologist's Report—The appendix was found acutely inflamed and the lumen filled with thin sanguineous pus. Section of the glands showed the usual round cell infiltration but no giant cells. The pathologist thought that they were probably early tuberculous glands

The patient made a satisfactory recovery and left the hospital on the tenth day. The wound healed with primary union. On account of the enlarged glands with the possibility of tubercular infection she was put on usual hygienic treatment with moderately forced feeding rest in bed including light therapy

It is quite likely that the repeated attacks of abdominal pain with associated nausea and vomiting of the past two years were caused from the inflamed glands found at operation. She had an acute attack of appendicitis thirty six hours before she was operated on

Discussion—There is considerable literature on mesenteric lymphadenitis. Some authorities seem to consider that the cause for mesenteric lymphadenitis is a tuberculous infection. However this assertion has never been satisfactorily proved. In fact the character of the attacks in many cases would tend to disprove this contention

I recall a case in which the symptoms resembled in every way an acute attack of appendicitis with indications of perforation

But numerous small lymphatic glands in the terminal ileum were removed and the patient after a stormy convalescence due to a very virulent type of infection made a satisfactory recovery. These cases undoubtedly present different grades of severity as we find in appendicitis. That is acute subacute and chronic

Just what part the appendix plays in the etiology of mesen-

teric lymphadenitis is difficult to determine. But it seems quite reasonable to assume that the appendix may be the source of infection as the enlarged nodes are usually found more prominent in the ileocecal region. Those who think the tuberculous infection to be the cause consider milk from infected cows as the source of infection and in some cases this has been definitely proved.

It is quite natural to assume that enteritis or ulcers in the intestines may also be a focus from which the infection is spread to the glands. Pains with a very sudden onset accompanied with high fever and abdominal rigidity indicate a very virulent type of infection probably streptococci.

Surgical treatment is indicated in mesenteric lymphadenitis when the characteristic symptoms are present. We should resort to surgery at once because of our inability to definitely differentiate between appendicitis and mesenteric lymphadenitis. Surgery enables us to get rid of a source of infection which may be an etiologic factor in causing the enlargement of the glands.

Many of the cases like tubercular peritonitis seem to derive benefit merely from opening of the abdomen. This also enables us to make a definite diagnosis and thereby institute the proper treatment. Prognosis is quite favorable in these cases. Nearly all make a satisfactory recovery when proper treatment following surgery is instituted.

Present Complaint—About thirty six hours ago she was taken with rather severe pain in epigastrium which finally localized in the right lower quadrant.

Examination—She is rather tall for her age and somewhat pale in appearance. Examination of the abdomen revealed marked tenderness at Mc Burney's point. Temperature 101 F., leukocytes 16,000. Diagnosis: Acute appendicitis.

Operation—We made a right rectus incision and found the appendix acutely inflamed and at the base the glands were considerably enlarged. On further examination many large glands were found extending along the mesentery of the cecum and the mesentery of the ileum (Fig. 372). These glands varied in size from $\frac{1}{2}$ to fully 1 inch in diameter. The appendix was removed, also two or three of the glands for biopsy.

Pathologist's Report—The appendix was found acutely inflamed and the lumen filled with thin sanguineous pus. Section of the glands showed the usual round cell infiltration but no giant cells. The pathologist thought that they were probably early tuberculous glands.

The patient made a satisfactory recovery and left the hospital on the tenth day. The wound healed with primary union. On account of the enlarged glands with the possibility of tubercular infection she was put on usual hygienic treatment with moderately forced feeding, rest in bed, including light therapy.

It is quite likely that the repeated attacks of abdominal pain with associated nausea and vomiting of the past two years were caused from the inflamed glands found at operation. She had an acute attack of appendicitis thirty six hours before she was operated on.

Discussion—There is considerable literature on mesenteric lymphadenitis. Some authorities seem to consider that the cause for mesenteric lymphadenitis is a tuberculous infection. However this assertion has never been satisfactorily proved. In fact the character of the attacks in many cases would tend to disprove this contention.

I recall a case in which the symptoms resembled in every way an acute attack of appendicitis with indications of perforation. At operation the appendix was found to be normal. But numerous glands along the mesentery of the cecum and ileum were found very much enlarged. The appendix was removed and the patient after a stormy convalescence due to a very virulent type of infection, made a satisfactory recovery. These cases undoubtedly present different grades of severity, as we find in appendicitis. That is acute, subacute and chronic.

Just what part the appendix plays in the etiology of mesen-

CHRONIC IDIOPATHIC ULCERATIVE COLITIS IN CHILDHOOD

This patient had been under treatment for ulcerative colitis for the past six years. When one year old he had colicky pains associated with diarrhea. All available methods of medical treatment by different physicians had been since used with no benefit. At the age of eleven he was admitted to the Children's Orthopedic Hospital of Seattle for observation and treatment. He was then having bloody and frequent stools—seven or eight times daily.



Fig. 373.—Radiograph of contracted colon.

Physical examination revealed the following factors. A boy eleven years old, undernourished and poorly developed. One infected tooth tonsils septic with enlarged cervical glands. Heart and lungs normal. Abdomen had no palpable mass, no rigidity or tenderness. The rectum was very tender during digital examination. Proctoscopical examinations revealed a characteristic picture of chronic ulcerative colitis.

Laboratory findings were as follows:

have encouraged this boy to take part in athletics as much as possible and urged him to mingle with other boys and forget his handicap. This I consider most important in the normal development of his character. There is great danger in a case like this of crippling his personality as well as self pity may give him an irreparable inferiority complex.

He knows all about his condition. He has been told that a great many have similar and worse handicaps who have been able to lead useful and normal lives. It is natural that a young boy of his age if properly handled would more easily accustom himself to his handicap than a person later in life who would be less pliable and willing to adjust himself to such a physical defect.

At present resection of the colon is out of the question. But if the contracted colon becomes a focus of infection causing arthritis or other complications it may then be necessary to remove the diseased colon.

Bargen in a recent paper presented before the King County Medical Society stated that his serum and vaccine will obviate the necessity of resorting to such a radical surgical procedure for the cure of ulcerative colitis.

Haskell in a recent issue of the American Journal of the Medical Sciences reports a series of 13 cases treated by calcium and parathyroid extract ammonium chloride and proper diet who were all symptom free in six weeks. In eleven of these he reports the ulcerations were healed. Although he reports a small series of cases his results are so encouraging that his method of treatment should be tried in treating ulcerative colitis.

Bockus of Philadelphia states that ulcerative colitis is not a distinct entity that it probably starts with bacillary dysentery and later changes to the classical picture of ulcerative colitis. At St. Mark's Hospital in London chronic idiopathic ulcerative colitis is considered as a metabolic disease with secondary infection of streptococci or Bargen's bacilli.

May I say in considering this a possible causative factor in ulcerative colitis I would like to stress the importance of removing all foci of infection such as diseased tonsils and teeth.

Hemoglobin 61, R B C 3 700 000 W B C 7600, polymorphonuclear leukocytes 60 lymphocytes 40

Wassermann and Von Pirquet tests negative Urine, negative

Stool Pus and mucus with many gram positive diplococci

The patient was immediately put to bed and given a high protein diet with plenty of vitamins At the end of a month, no improvement was noticeable Autogenous vaccines were given and thyroid gland therapy was instituted At the end of two and one half months of hospitalization care and treatment the medical staff asked for surgical consultation

On October 26 1928 I performed ileostomy, appendectomy and excised a mesenteric gland for biopsy The child made an uneventful recovery remaining in the hospital about six weeks after the operation He was seen every two or three months for the next year during which time he made excellent progress

Fourteen months after the ileostomy was done, he was readmitted to the hospital for proctoscopic examination A stricture was found about 3 inches above the anus with numerous ulcerations exuding pus A year later he returned to the hospital for further study At this time, I did some plastic work on the ileostomy reducing the prolapsing mass x Ray taken at this time showed the colon contracted throughout to about the size of a lead pencil (Fig 373)

Discussion—Here we have a young boy, only thirteen years of age on whom I did an ileostomy two years ago for extensive ulcerative colitis which at that time was at least of six years' duration and possibly longer The operation was an emergency procedure, as everything available in the medical armamentarium had been tried without success including autogenous vaccine He commenced to improve as soon as the ileostomy began to function properly, and as you see the improvement has continued

At the time of the operation I hoped that at the end of a year or two, I would be able to close the ileostomy of this youngster But unfortunately, at the end of two years, as it often happens in chronic idiopathic ulcerative colitis of long standing we find the entire colon contracted to such a small caliber that it will be impossible and unwise to close the ileostomy Therefore he

CLINIC OF DR CHARLES D LOCKWOOD

PASADENA HOSPITAL, PASADENA, CALIFORNIA

AUTOTRANSFUSION

This patient is presented to illustrate the great value of utilizing the patient's own blood after severe hemorrhage, in certain conditions where a suitable donor is not promptly available

Personal History—Age thirty three years married Has had several normal pregnancies

Complaint—This patient was seized with sudden severe pain in the lower abdomen, about 9 o'clock in the evening The patient suffered from rectal tenesmus and had a bloody vaginal discharge She had not been previously examined and when first seen her true condition was not suspected The pain persisted patient became faint and greatly alarmed over her condition About midnight February 21 1929 she was brought to the Pasadena Hospital in an ambulance and was first seen by me about 2 A M At this time the patient was almost pulseless her respirations rapid and difficult, the skin moist and clammy She evidently was almost exsanguinated

Past History—The periods had been irregular with slight intermenstrual bleeding Patient said this was due to a growth on the cervix which had been cauterized several times

Examination—Pulse 150, weak rapid low tension

Respirations 30

Head Several filled teeth

Chest Heart tones rapid and indistinct No murmurs

Lungs normal

Abdomen Distended and tense, fulness over the suprapubic region

Per Vaginam Cervix lacerated and eroded There was a movable tumor back of the uterus and to the right This was thought to be the fundus of the uterus displaced by a tumor mass and probably a large hematoma of a ruptured extra uterine pregnancy

Operation—Under gas anesthesia The abdomen was opened through a suprapubic midline incision Upon opening the abdomen a large ectopic sac was found attached to the posterior wall of the uterus and the left broad ligament The sac had ruptured and the fetus was in the abdominal cavity still attached to the placenta by the umbilical cord The placenta remained within the sac The fetus was 11 cm in length and perfectly formed The abdomen contained about 1000 cc of clotted blood This was quickly scooped out with the cupped hands and placed in a sterile basin In this way about 500 cc of blood was recovered This was citrated with 50 cc of $\frac{1}{2}$ per cent

filtered or diluted with normal salt solution and then filtered through four thicknesses of gauze. If the blood to be removed is lost through constant oozing, as in brain surgery or hysterectomy, it should be aspirated by suction into a sterile bottle, citrated and filtered. The recovered and defibrinated blood is then introduced into the basilic vein in the ordinary way. Contaminated blood as in prostatectomy or in conjunction with infected wounds may be diluted with normal salt solution and given per rectum by the drip method.

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sodium citrate and to this was added 500 cc normal salt solution. This was given intravenously while the abdomen was being closed. The entire operation including the autotransfusion required only twenty five minutes. The patient left the table in good condition except for a rapid pulse. She was given an obstetrical ampule of pituitrin before leaving the table.

The postoperative convalescence was uneventful. Patient left the hospital in twelve days.

Comment—The procedure of autotransfusion was first proposed in this country by the author in 1916, in a paper read before the Western Surgical Association¹ on the subject of Banti's disease. At that time 2 cases of splenectomy were reported where this procedure was employed and the name of autotransfusion was suggested as an appropriate nomenclature. In one of these cases the spleen, which was a very large one contained 750 cc of blood and as the patient was already anemic and debilitated it proved a life saving measure in his case.

In reviewing the literature at the time of my original paper I could find no references in American literature to the procedure but I found that a German gynecologist, Thies,² had employed autotransfusion in 3 cases of extra uterine pregnancy, and his report antedated mine by two years.

Since 1916 the method has come into general use both in this country and in Europe and there have been many references in the literature advocating its employment. There were no reported cases where the procedure had been employed in splenectomy prior to my case.

Autotransfusion has proved valuable in

- 1 Splenectomy in Banti's disease where a very large and vascular organ is encountered
- 2 Traumatic rupture of any abdominal viscus with severe internal hemorrhage the liver and spleen are the organs most often injured
- 3 Ruptured extra uterine pregnancy and rupture of the uterus
- 4 Any operation where there is excessive loss of blood which can be recovered and kept sterile

Technic—The blood is best scooped out of the abdomen with the hands arranged cup fashion. It may be either citrated and

filtered or diluted with normal salt solution and then filtered through four thicknesses of gauze. If the blood to be removed is lost through constant oozing, as in brain surgery or hysterectomy, it should be aspirated by suction into a sterile bottle, citrated and filtered. The recovered and defibrinated blood is then introduced into the basilic vein in the ordinary way. Contaminated blood, as in prostatectomy or in conjunction with infected wounds may be diluted with normal salt solution and given per rectum by the drop method.

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ARTERIOVENOUS ANEURYSM

THIS patient is presented to illustrate a very rare and interesting type of injury to the vascular system known as arteriovenous aneurysm.

Personal History—Age forty years married Powder man

Complaint—While working in a tunnel on the construction of a dam a premature explosion of dynamite occurred injuring this patient and two others. Many small fragments of rock varying in size from a pinhead to the size of a lima bean, were driven into his tissues. One of the larger of these stones entered his left arm near the elbow joint causing a compound comminuted fracture of the left ulna and a dislocation of the radius at the elbow joint. This injury was treated by Dr. John Dunlop and does not come within the scope of this clinic. Many fragments were also driven into the right arm and hand. One of these injured the ulnar artery and a larger one about 2 cm. in diameter entered the ulnar vein (Fig. 374). At the end of two weeks while the patient's left arm was still in the plaster of paris he began to complain of severe pain in his right arm near the elbow in the region of the larger fragment of stone revealed in the x ray. At this time I was called in consultation.

Examination—There was a small expansile tumor at the flexure of the right elbow and on auscultation a bruit was plainly heard transmitted upward and downward along the course of the radial artery. When the pulsating tumor was palpated it transmitted a definite thrill. Upon compression of the brachial artery above the elbow the tumor disappeared the bruit could no longer be heard and the thrill was absent. The radial pulse could be felt but was small.

Diagnosis—It was evident from the history of the injury the presence of an expansile tumor with a bruit and thrill that we were dealing with an arteriovenous aneurysm. It was impossible to determine the exact location of the aneurysm before operation. It might have involved the brachial artery above the bifurcation or either of the main branches. It was so near the bifurcation that ligation above and below the aneurysm seemed impossible. If below the bifurcation either the ulnar or radial artery was injured so close to the bifurcation that quadruple ligation did not seem feasible. The possibility of amputation above the elbow confronted us.

Treatment—Owing to the rapid increase in size of the aneurysm and the presence of a scar of a large triangular wound over the most prominent part of the tumor, it was feared that perforation with fatal hemorrhage might occur. The arm was placed in a molded plaster of paris splint and kept in an elevated position for two or three days in the hope that it might reduce the swelling and pain. The aneurysm however continued to increase in size and the pain was not relieved. Consequently three days after first seen by me operation was undertaken.

Operation—Incision extending over the midline of the elbow from 2 inches above the joint to 2 inches below. The brachial artery was exposed

for 2 inches above its bifurcation and found intact. A large pulsating tumor presented just below the elbow and to the inner side of the arm. It was impossible to locate the exact site of communication between the artery and



Fig. 3rd —Triangular stone found in aneurysmal sac. Small stone near coronoid of ulna probably caused perforation of artery.

vein, nor could one be sure whether the communication was between the ulnar or radial artery. But the location of the pulsating sac indicated that the ulnar rather than the radial was the vessel involved. After division of

the bicipital fascia a temporary ligature was placed about the brachial artery which could be tightened or released at will. The aneurysm sac was then carefully dissected out and while the brachial was compressed the sac was opened. It was filled with a blood clot the size of a large English walnut and contained a triangular stone shown in the x ray picture (Fig. 375). On releasing the brachial ligature there was free arterial hemorrhage into the sac. After again controlling hemorrhage a careful search was made for the point of communication between the artery and the vein. After some difficulty a small perforation was found on the mesial side of the ulnar artery very close to the bifurcation. The ulnar artery was ligated so close to the bifurcation that the wall of the brachial was invaginated into the radial artery causing apparent complete obstruction to the flow of blood. The color of the hand however was good and it was decided to risk leaving the ligature

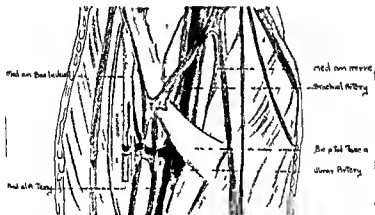


Fig. 375 —Normal anatomy about the elbow joint

in place. The aneurysmal sac was then freed of clots and debris and closed by aneurysmorrhaphy (Fig. 376). The wound was then closed without drainage dressings applied and the arm placed in a plaster of paris splint.

Postoperative Course —The ulnar side of the wrist and hand was blue and cold for twenty four hours but the radial side was warm although no pulse could be felt. The circulation steadily improved and at the end of a week the whole hand was warm and a faint radial pulse could be felt. The wound healed without infection and the man made a complete recovery with only slight weakness and limitation of motion at the elbow joint from cicatricial contraction.

Comment —Arteriovenous aneurysm may occur in almost any part of the circulatory system. Up to 1920 a comprehensive

for 2 inches above its bifurcation and found intact. A large pulsating tumor presented just below the elbow and to the inner side of the arm. It was impossible to locate the exact site of communication between the artery and



Fig. 3-4.—Triangular stone found in aneurysmal sac; small stone near coronoid of ulna probably caused perforation of artery.

vein, nor could one be sure whether the communication was between the ulnar or radial artery. But the location of the pulsating sac indicated that the ulnar rather than the radial was the vessel involved. After division of

between the two vessels, marked cardiovascular changes are likely to develop. The circulating blood is diverted from its normal bed through the arteriovenous fistula and this leads to increased work upon the heart to propel the extra amount of blood necessary to maintain the circulatory balance. The proximal artery becomes greatly dilated, lengthened and tortuous. The ultimate result is a hypertrophy and dilatation of the heart. These changes come about in the circulation gradually and the heart returns to normal after cure of the aneurysm. In from three to six months a collateral circulation is established around the aneurysm and operation ordinarily should be deferred until an adequate collateral circulation is developed. In this case under discussion immediate operation seemed imperative because of the danger of hemorrhage.

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study of the literature by Callender¹ recorded 447 cases. Very little was known of the pathology and physiology of this condition up to five years ago. Since that time research studies by

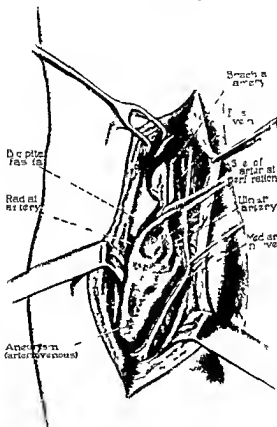


Fig. 36.—Drawing made from life at time of operation.

Matas,² Makins,³ Holman,⁴ have given us a clear conception of the ultimate results of aneurysms of this type. If any of the larger vessels of the body are involved and a large fistula exists

CARCINOMA OF BREAST: RADICAL AMPUTATION WITH CAUTERY

In presenting the following case, we wish simply to emphasize the work of Percy and Scott. For the past three years, in performing the radical operation for carcinoma of the breast, we have used the actual cautery to the exclusion of the knife. While we have used the radio-frequency unit in about 15 cases in the past year, we prefer the actual cautery and have returned to its use exclusively.

Mrs. A. E., age forty six years, came to the hospital September 28, 1930, because of a tumor in the right breast noticed for the first time two months before. There had been no pain. On examination there was a hard tumor involving most of the right breast with numerous firm glands in the axilla. There was some dimpling of the skin just above and to the right of the nipple, where the tumor was most prominent. Although the diagnosis of adenocarcinoma was evident the routine of transilluminating the tumor was attempted. As expected the tumor was opaque. Roentgenogram of the chest was negative as were other findings.

Operation was performed September 29, 1930 after the usual technic, which is as follows: An elliptical incision of the breast is made continuing it upward over the shoulder and downward over the insertion of the rectus abdominis muscle of the same side (Fig. 377). The incision is made with the cautery which is carried at a white heat and the skin is held on a stretch by the assistants as it is severed. This permits healing by first intention. Following this incision through skin and fat down to muscle, the pectoralis major is severed near its insertion and is dissected back 7 or 8 cm. The pectoralis minor is then divided with the cautery at a cherry red heat, and it too is dissected back for 7 or 8 cm. The axillary vessels are now exposed by lifting the axillary pad of fat with blunt thumb forceps and removing it with short quick strokes of the cautery at a dull red heat, the assistant clamping the vessel branches as they are laid bare (Fig. 378). In stripping these vessels, the stroke of the cautery should be in the direction opposite to the direction of the blood flowing in the vessel or, in other words, the stroke should be

away from the body in stripping the vein and toward the body in stripping the artery. This permits the blood current to cool the vessel wall and prevents scorching. No effort is made to preserve the long subscapular nerve; it is simply severed in approach with the cautery at white heat. This enables more complete removal of the fat and lymph glands that envelop the blood vessels.

After the dissection of the axilla with the cautery this region is protected against heat loss by covering with large gauze packs saturated with warm salt solution (Figs. 379-380). With the axilla protected the breast is

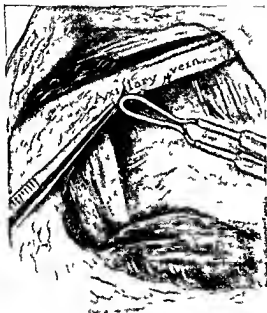


Fig. 379—Showing the clean cut fascial dissection made possible by the

now removed. This is done with the cautery closely approaching a white heat and requires only a few minutes to complete. When the upper border of the rectus abdominis is reached the anterior sheath of the muscle is removed for 5 or 6 cm. in each direction. This is done in an endeavor to interrupt the lymphatic communication about the umbilicus with the deep lymphatics of the falciform ligament and diaphragm. In the removal of the lower part of the breast numerous small bleeding points are exposed and must be caught with hemostats. Many of these can be controlled by simply applying

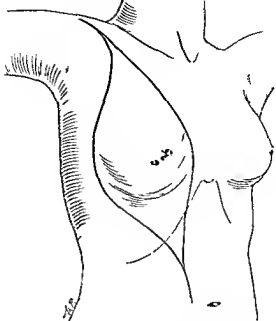


Fig. 377—The line of incision for radical amputation of the breast



Fig. 378—The skin is kept on the stretch with the aid of towel clips when the incision is made. Note that the used side of the cautery has cooled while the other remains at white heat after one stroke has been taken

away from the body in stripping the vein and toward the body in stripping the artery. This permits the blood current to cool the vessel wall and prevents scorching. No effort is made to preserve the long subscapular nerve; it is simply severed in approach with the cautery at white heat. This enables more complete removal of the fat and lymph glands that envelop the blood vessels.

After the dissection of the axilla with the cautery, this region is protected against heat loss by covering with large gauze packs saturated with warm salt solution (Figs. 379, 380). With the axilla protected, the breast is



Fig. 379 — Showing the clean cut fascial dissection made possible by the use of the cautery. This dissection of the axillary region is accomplished before the breast is removed in order to destroy the lymphatic connections before removal of the growth and also to reduce the heat loss and subsequent shock.

now removed. This is done with the cautery closely approaching a white heat and requires only a few minutes to complete. When the upper border of the rectus abdominis is reached, the anterior sheath of the muscle is removed for 5 or 6 cm. in each direction. This is done in an endeavor to interrupt the —

the heat close to the point of the hemostat for from ten to twenty seconds. Few will necessitate ligatures. The wound is closed without using drains. Since a large area of skin is removed it is necessary for closure to loosen the skin by undermining the skin edges. This is done with the cautery also. In the case reported here so much skin was removed that it was necessary to shift two pedicle grafts from the side over the denuded area. Figure 381 shows the healed scar and illustrates the ready healing seen after operation with the cautery. The incision is usually healed by the end of from two to

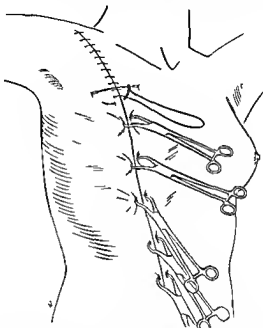


Fig. 380—Quick method of closing the skin flaps preparatory to suturing over the cauterized area to prevent loss of body heat and shock.

three weeks. Occasionally there is serous drainage from the axilla at the

found an adenocarcinoma grade 3 and in some of the glands removed from the axilla malignant cell nests were found

It should be mentioned that we give the patient sodium amytal before operation and use light chloroform anesthesia. Because of the explosive nature of ether and ethylene or ether combined with nitrous oxide we do not use these when working with the cautery.



Fig. 381 — Photograph March 14, 1931 of healed incision following radical breast amputation with the actual cautery. Operation was performed September 29, 1930. So much skin had to be removed that the denuded area was covered by two pedicle skin grafts from the side. The scar shows the pattern of these grafts.

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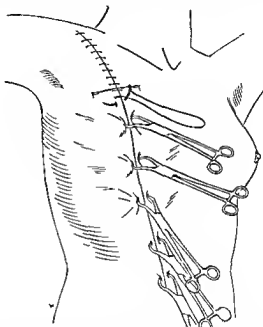


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three weeks. Occasionally there is serous drainage from the axilla at the axillary fold. We like to encourage the patient to use the arm freely from the

SPLENIC ANEMIA WITH GALLSTONES CASE REPORT

Miss E. H. came to the hospital first on August 2, 1927. She was then sixteen and her complaint was of weakness.

The family history was negative. The father, mother and four sisters were in good health.

As a baby the patient was not strong although she was symptom free until she reached the age of twelve. At that time in 1923 she began to suffer spells of vomiting and abdominal cramps followed by generalized abdominal tenderness. The attacks usually lasted three or four days and occurred every two or three months.

In January, 1925 her physician saw her with one of these severe abdominal colics and thinking of an acute appendicitis performed a laparotomy. The appendix was removed but the physician says he was not satisfied that the appendix showed pathology sufficient to explain the extreme abdominal tenderness and pain. Following the operation a bilateral cervical adenitis developed which was drained. Subsequently a severe infectious nephritis

involving the spleen persisted in varying intensity up to the time of admission to the hospital. Neither the patient nor the patient's family noticed any relation between the attacks of colic and the intensity of the jaundice. No clay-colored stools were observed. During this two year period from the fall of 1925 to the fall of 1927 she suffered every two or three weeks with severe generalized abdominal pain and vomiting each attack persisting for several days. In the spring of 1927 the local physician removed 4 quarts of clear ascitic fluid from the abdomen by paracentesis.

On August 2, 1927 the patient was referred to us because of the increasing severity of her complaints of abdominal colic, jaundice, ascites and general debility.

Examination at that time revealed a marked emaciation and a waxy anemic pallor of the face with a fairly intense jaundice of skin and sclerae. The temperature on admission was 101° F., the pulse 120 per minute, the blood pressure 100 systolic, 65 diastolic. There was a harsh systolic murmur over the base of the heart. There was a slight but definite accumulation of fluid in the abdominal cavity. The liver was palpable three fingerbreadths below the costal margin and it was smooth in contour. The spleen was enlarged and palpable below the left costal margin.

The hemoglobin was but 20 per cent (Dale) with an erythrocyte count of but 980,000. The leukocyte count was 7200 with a differential of neutrophils 60 per cent, large mononuclears 14 per cent and lymphocytes 26 per cent. The erythrocyte fragility test showed a slight increase in the



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However a slight tinge of jaundice had been persistently noticed and on December 19 1929, twenty three months after cholecystectomy another abdominal storm exactly similar to previous attacks had occurred with vomiting and abdominal cramps and with blood apparently in the urine and stools. A second attack on January 1 1930 caused the patient to return to the hospital.

At this time the liver was not palpable and no ascitic fluid was detectable. The patient was well nourished. There was a mild jaundice. The hemoglobin was 35 per cent (Dare) the erythrocyte count 3 300 000 and the leukocytes 18 500 with 74 per cent polymorphonuclears.

On March 28 1930 the patient was again seen. In the interim she had suffered several more severe attacks of colic and jaundice of varying intensity persisted. With liver and iron administration and two transfusions the hemoglobin had increased to 50 per cent (Dare) with an erythrocyte count of 2 900 000 and a reticulocyte count of 9 per cent. Roentgenogram of the kidneys revealed enlarged irregularly contoured shadows. The urine was essentially normal as was the blood chemistry with the exception of a positive indirect van den Bergh reaction. Cystoscopic examination secured normal urine from both kidneys.

Since severe attacks of colic had accompanied the recurrence of jaundice we feared obstruction of the common bile duct by stricture or stone. Therefore the upper abdomen was again opened. Entering through the old scar we encountered some adhesions of the duodenum to the liver. The liver was now of about normal size and no ascites was present. At the presumable site of the cystic duct stump there was a marked fibrous stenosis of the common duct and the duct was dilated above this stricture. After probing in either direction the fibrous tissue was removed and a T tube was left in the duct. We had expected to leave this tube in the common duct for a year or more but on the twelfth postoperative day it was pulled out accidentally. However, bile drained freely from the incision and convalescence was uneventful.

The patient was last seen February 7 1931. She is relatively well and fairly strong enjoyed swimming last summer and is fairly active now. She weighs 114 pounds and has grown 2½ inches in height. There have been no attacks of colic since the last operation although the skin and sclerae are occasionally tinted faintly yellow. The incision drained bile until August 1930, a period of five months when it healed completely. The patient has observed the stools carefully and says they have never been without color since the last operation. The hemoglobin on this recent date was 60 per cent (Dare) erythrocytes 2 700 000 the skin and sclerae were slightly jaundiced. The stools contained bile and the van den Bergh showed 4.8 mg direct reaction. The kidneys maintain a good function with a phthalein excretion of 60 per cent the first hour and 5 per cent the second hour a creatinine of 1.5 and urea nitrogen of 12. The urine showed a moderate trace of albumin. The blood pressure was 132 systolic and 90 diastolic. There was no ascites the liver dulness was normal but the lower border could not be felt, even on deep inspiration. The afternoon temperature was 99 F.

resistance (hemolysis beginning at 0.35 per cent and complete at 0.25 per cent). The direct van den Bergh was negative. The Wassermann reaction on the blood was negative. Urine analysis revealed a trace of albumin and many granular casts with some pus and red blood cells. Subsequent examinations occasionally revealed only a trace of albumin. Tests for blood pigment in the urine were frequently positive.

A roentgenogram of the chest showed only a slight hypertrophy of the heart; that of the stomach showed no deformity and the gastric acids were normal. A cholecystogram revealed gallstones.

The patient was kept in the hospital for five weeks. During this time the hemoglobin was elevated gradually by five transfusions of blood from 30 to 55 per cent (Dare) and the erythrocyte count from 980,000 to 2,400,000. During this time the temperature ranged from 98.6 and 99 F. in the morning to 100 or 101 F. in the afternoon. Some afternoons it was recorded as low as 99 F.

On September 10th the spleen was removed. The spleen was about 25 per cent larger than normal, fibrotic and adherent by delicate adhesions to the diaphragm and abdominal wall. There was a small amount of free ascitic fluid. The gallbladder on exploration contained two stones and the liver was enlarged approximately 20 per cent above normal size. On delivery of the spleen the under surface of the diaphragm had to be packed temporarily to control bleeding. Two hundred fifty cc. of blood lost in this manner was returned to the circulation by an autotransfusion and in addition 500 cc. of blood from a donor was administered. Convalescence was uneventful. The hemoglobin remained about 50 per cent (Dare) and the erythrocyte count about 3,000,000.

Eighteen days after splenectomy the patient was allowed to go home. She remained at home a week and was then readmitted to the hospital for cholecystectomy. This was performed November 5th. At operation there was much inflammatory exudate over the dome of the liver and numerous adhesions over the under surface and about the gallbladder. The liver was enlarged some 25 per cent above normal size and the entire organ felt firm and the bile ducts thickened. The gallbladder with contained stones was removed and a small drain was left at the stump of the cystic duct.

Three months after cholecystectomy the patient reported marked improvement in every way but during this interval she had suffered five attacks

removed with relief of backache. The hemoglobin at this time was 40 per cent (Dare) and the erythrocyte count 1,600,000. Liver feeding was ordered.

The patient was next seen January 8, 1930, two years after splenectomy and cholecystectomy. The attacks of abdominal pain and vomiting had patient rapidly improved, gained greatly in strength and in the next eight months gained in weight from 66 to 106 pounds.

avored an increased perihepatic and liver damage. The complication of common duct stricture with obstruction was unfortunate and would, because of consequent peribiliary fibrosis have resulted in a more rapid loss of liver function had it not been corrected. The association of severe colic with the recurrence of jaundice two years after cholecystectomy guided us to a diagnosis of obstruction and a consequent discovery of the common duct stricture. Had it not been for the attacks of pain we might have assumed the recurrence of jaundice to be due to intrahepatic damage and not to obstruction. In borderline cases the amount of bile draining into the duodenum can be determined by the duodenal tube and is helpful in distinguishing intrahepatic from obstructive jaundice. The occasional tinge of jaundice which the patient says she has now is we believe due to intrahepatic damage. The stools are always colored. Since at present we have no reliable tests of liver function the prognosis in this case must remain a matter of conjecture only.

Treatment includes attention first to the hepatic function and second to the kidney function and third a close check on the loss of blood through a tendency to bleed. Mann's work has done much toward increasing the function of a damaged liver. In dogs with experimentally damaged livers he has produced marked ascites and toxemia by feeding the dogs a high protein diet, while on the other hand if this condition has not been allowed to go too far he has been able to eliminate the ascites and reduce the toxemia by eliminating the protein from the dog's diet and giving him a high carbohydrate diet. The high carbohydrate and low protein diet is of first importance in improving the function of a damaged liver. In addition to the low protein and high carbohydrate diet we are giving this patient liver extract with iron. As for the kidney function in this patient the tests taken at the last visit showed it to be very good in spite of the history of acute nephritis following appendectomy and the influence of a damaged liver. While there have been no hemorrhages the anemia persists. The persistence of anemia and jaundice detracts from a favorable prognosis.

Summary—The case presented is of a girl sixteen years of age with both splenic anemia and gallstones. Attacks of gallstone colic had been frequent from the age of twelve years. Within a two month period at the age of sixteen we removed both the spleen and the gallbladder. The spleen was the fibrotic and enlarged organ seen in Banti's disease. At the time of splenectomy and cholecystectomy the liver was already markedly damaged and ascites and jaundice were present. Cholecystectomy was complicated by the development of common duct stricture. This was corrected twenty eight months after cholecystectomy and since correction a period now of one year the patient has enjoyed fair health although anemia and mild jaundice persist.

Comment—It is interesting to note the frequency with which gallstones are found coincident with splenic and biliary disease. Despite the rarity of gallstones in children it is not so unusual to find cholecystitis and lithiasis in children with splenic anemia. While in the syndrome of Banti's disease digestive disturbances and abdominal discomfort are complained of acute severe abdominal storms such as were seen in this patient should lead one to study the gallbladder.

The important consideration in this case at present is the prognosis. Experience has shown this to depend largely upon the degree of liver damage at the time splenectomy is performed. Patients undergoing splenectomy early before any liver damage can be demonstrated have been cured in some instances. On the other hand late in the disease with a sclerotic liver and ascites splenectomy has not proved as efficient in checking the progress of the disease the liver function has gradually decreased and the patient has died within several years from an intercurrent infection or hemorrhage. In about one third of these liver damaged cases the kidney function is also impaired and in some the patient may die from cardiorenal disease. In this case there have been three causes contributing to liver pathology. In all probability the greater part of the liver pathology seen at operation was the sequence of the syndrome known as splenic anemia or Banti's disease. The cholecystitis and lithiasis

CYSTIC HYGROMATA: TWO CASES

Case I—Baby W. W. male aged two years was admitted to the hospital March 31, 1930 for recurrent tumor of the neck. One year ago when the child was fifteen months of age the mother first brought him to us for removal of a cystic tumor from the right side of the neck. The tumor had been noticed first as a small lump when the infant was only one month old. It had enlarged silently since then to the size of a baseball, was cystic on palpation and was situated just behind the angle of the jaw. The mother claimed that she noticed some fluctuation in the size of the tumor from time to time.



Fig. 382.—Case 1. Drawing of baby two years of age with cystic hygroma of the neck.

Believing this to be a branchial cyst we made an incision along the angle of the jaw and a large multilocular cyst filled with straw-colored fluid was dissected out. Several deep pockets were dissected as far as possible and the remainder of the cysts lining destroyed. The internal jugular vein was greatly dilated and this was nicked during the operation but was sutured without untoward effect. The base of the cyst was found to communicate with the base of the right tonsil.

Following operation no evidence of injury to the facial nerve was observed immediately but on the next day the side of the neck was swollen considerably with serum in the loose tissues and a complete paralysis of the facial nerve had developed. However eleven months later the child is well, the neck appears normal except for the incision scar and the function of the facial nerve has returned except for a droop to the corner of the mouth noticed when the child cries. Six weeks after removal of the recurrent tumor, the child had a severe tonsillitis and there was some associated enlargement of the neck again. After the acute attack subsided the tonsils which were large and cryptic were removed. As stated the neck has remained normal since.

Case II—Baby D 1, male aged sixteen months was referred to the hospital November 20 1930 for tumor of the neck. The tumor had first been noticed at the time the mother had mumps when the baby was three months of age. The swelling then was barely perceptible under the left lower jaw. After two weeks the swelling subsided but after two weeks more was again noticed and from that time persisted. It varied in size. Two weeks before admission to the hospital the baby acquired a coryza and the



Fig 384—Case II Photograph of cystic hygroma of the neck in a baby sixteen months of age

tumor coincidentally increased rapidly to the size of a small orange. It was always soft and cystic and never tender or inflamed. It had been opened on three occasions by the local physician about 5 drams of serum being removed each time, only to refill to the original size within twenty four hours. The last drainage was eight days before admission to the hospital. The temperature during this time is not known. On admission it was normal. Except for the tumor, the baby had been entirely well. On examination, the tumor felt polycystic and insensitive. It was 8 by 4 by 4 cm. in size and occupied

The child was next seen by us March 19 1930 for correction of a long prepuce with phimosis. Except for the postoperative scar there was no trace of the former neck tumor. The child now two years of age, was circumcised in the office under ether anesthesia. The second day thereafter he was brought back to us with a cystic enlargement in the neck at the site of the former tumor. This suddenly developing tumor was the size of a large orange, cystic and smooth and regular in contour. The child's temperature was 103 F. A small incision and attempted drainage showed the tumor to be polycystic and some pus was evacuated from several of the locules.

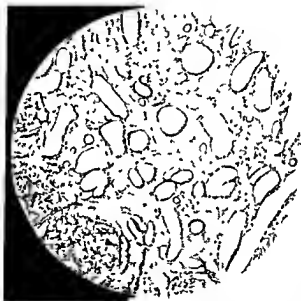


Fig. 353—Case I. Drawing of microscopic section of a cystic hygroma removed from the neck of a baby two years of age.

the pelvis. If development is arrested early these blind sacs do not form into a system of connected lymphatics but instead become cysts. Such cysts or hygromata are therefore always congenital. They may occur in the neck axilla or perineum or in the retroperitoneal tissues.

Hygromata are not to be considered as neoplasms. However they may become very extensive in their development. The difficulty of complete surgical eradication of these endothelial lined spaces can be appreciated when the embryology of their development is considered. The close relationship in the first case with the lymphoid tonsil is not surprising.

In the neck hygroma is to be differentiated chiefly from branchial cyst. Branchial cyst represents a slowly growing *epiblastic* cell rest caught in the mesoblastic layer of a branchial cleft which has not closed properly. It is neoplastic although as a rule relatively benign. However it consists of epithelial cells and occasionally therefore may be the seat of very malignant epitheliomata.

Clinically branchial cysts are more common in males than in females may be noted in early life but are seldom observed until adolescence or later. Growth is slow. They are most common in the left side of the neck and in most cases present in front of the sternomastoid muscle. Unlike hygromata they are round and regular in contour. Hygromata on the other hand due to their polycystic nature are often very irregular in contour.

As for treatment some authors are content to tap frequently and after each tapping to wash out with carbolic acid (2 to 3 per cent) and to apply pressure hoping by this method to destroy the endothelial lining but the polycystic character of the tumor makes this about as impracticable as extirpation. If surgical removal of a hygroma extending high in the parotid region is attempted it is perhaps safer to incise the skin high behind the auricle of the ear and expose the facial nerve before dissecting the tumor. This will insure against injury to the nerve. However this may not be advisable where the tumor has been tapped repeatedly with consequent inflammatory fibrosis and adhesions making dissection difficult.

the left submaxillary triangle with extension into the region of the parotid gland. The tonsils were large but not inflamed. Other physical and laboratory findings were negative.

Operation confirmed the diagnosis of polycystic hygroma extending



Fig. 385—Case II. Photograph of the baby shown in Fig. 384 taken two weeks after operation.

active. There was no impairment of the facial nerve at any time, although there was a moderate amount of edema at the site of the operation for seven or eight days. Figures 384-385 show the child's neck before and after operation.

Comment—Hygroma cysticum is lined by endothelial cells and represents a localized lymphangiectasis. As Hadley has pointed out, the embryological development of the lymph system passes through two stages. In the first the primitive lymph sacs form in the mesoblastic layer from veins. In the second

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Operation confirmed the diagnosis of polycystic hygroma extending from the submaxillary triangle inward to the parotid region and downward close to the jugular vein and into the fascial planes separating the trachea from the esophagus. Several locules of the cyst were ruptured in enucleating the tumor. Several inaccessible locules behind the angle of the jaw were opened



Fig. 385.—Case II. Photograph of the baby shown in Fig. 384 taken two weeks after operation.

and cauterized with phenol. Because of the close proximity of the tumor to the trachea, there was rather marked tracheitis with edema following within twenty-four hours after removal of the tumor, and at one time we thought a tracheotomy might become necessary. However, with the use of the oxygen tent this condition was relieved, the child recovered, and is now well and active. There was no impairment of the facial nerve at any time, although there was a moderate amount of edema at the site of the operation for seven or eight days. Figures 384-385 show the child's neck before and after operation.

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GASTROCOLIC FISTULA

Mr. E. H. B., Alaskan, age fifty years, was first seen by us in January, 1927. At that time his symptoms were typical of duodenal ulcer, dating back three and a half years. Fluoroscopic and roentgen ray examination proved a duodenal ulcer, and on January 20, 1927, the operations of posterior gastro enterostomy and appendectomy were performed. At operation, in addition to the ulcer, there was found a considerable amount of duodenitis,

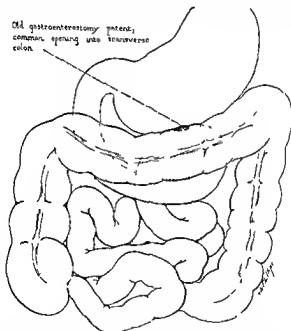


Fig. 386.—Diagram of gastrocolic fistula developing two and a half years after posterior gastro enterostomy from perforation of a marginal ulcer into the transverse colon.

and the appendix was subacutely inflamed. Following operation, the patient felt perfectly well, had no recurrence of his stomach trouble and gained in weight from 158 to 180 pounds. He remained symptom free until about July 4, 1929, a period of two and a half years, when he began abruptly to have a severe painless diarrhea, having from twelve to fifteen bowel movements every twenty four hours. There was no blood or mucus in the stools.

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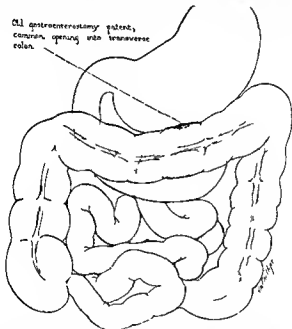


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tient had a severe painless diarrhea having from twelve to fifteen bowel move-
ments every twenty four hours. There was no blood or mucus in the stools.

peritoneum were dissected free. The pylorus was examined and was found open, and the duodenum showed no evidence of previous scarring. The gastro-enterostomy was patent and on first examination seemed to have very little fibrous tissue around the lumen. However, by passing a finger downward on the stomach side, one could feel not only an opening from the stomach into the jejunum but also a large opening into the transverse colon (Fig. 386). This common opening into the stomach, jejunum and transverse colon resulted presumably from a marginal ulcer developing on the anterior side of the anastomosis and ulcerating through into the overhanging transverse colon. To correct this the stomach was separated from the large and small intestine, a clamp was applied to the rent in the colon and jejunum and the opening in the stomach was closed. The jejunum was then separated from the colon and the jejunal opening closed transversely. The wall of the colon for some distance about the rent was very indurated and edematous and the problem of contamination from the large bowel and consequent infection presented itself. Attempting to avoid a local and possibly a general peritonitis we brought the colon up through the abdominal wall in the same manner as is done for a temporary colostomy although the intestine was not brought quite so far through. Preparation was made for a temporary fistula which did ensue. The patient gained rapidly after operation. However we did not hurry to close the fistula but waited four weeks during which time we cut down the mesenteric spur by clamping. At the end of this time a small elliptical incision was made around the colostomy opening, the mucous membrane was sutured over and the colostomy was closed. The peritoneum was not entered. A small drainage tube was left at each end of the closed incision. The patient had already regained much of his strength and with the prompt healing of the colostomy wound was able to return home. A follow up letter in February 1931 found the patient in perfect health symptom free and weighing 198 pounds.

With the diarrhea, he was nauseated and vomited during the night for the first two weeks. He returned to Seattle from Alaska, and, on readmission to the hospital August 22, 1929 he was quite weak and had lost 25 pounds in weight since July 4th preceding. Physical examination, except for pallor and loss of weight, was negative. Fluoroscopic and roentgen examination revealed a gastroduodenal fistula, with the barium enema ascending directly to fill the stomach and duodenum by mouth passing quickly from the stomach into the colon.

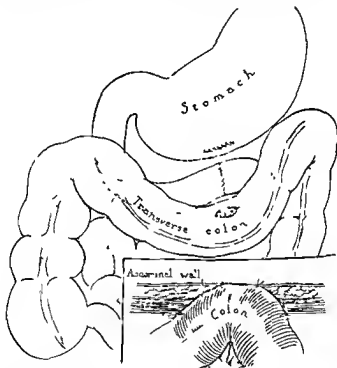


Fig. 38:—Diagram showing gastrocolic fistula disconnected with the resulting hole in the stomach and jejunum closed. Because of large bowel cavity, the closed aperture in the colon was not left in the peritoneal cavity, but this portion of the colon was anchored outside the abdominal wall, as shown in the inset.

RECTOVAGINAL FISTULA

In reporting these cases of rectovaginal fistula we wish to call attention chiefly to the importance we place on cutting the sphincter ani muscle as an adjunct to the plastic repair. One case of a single small fistula and one of multiple fistulae are reported.

Case I—Mrs. A. A. housewife age twenty seven years was admitted to the hospital December 9, 1930 for repair of a rectovaginal fistula. At the first childbirth ten years before a marked perineal laceration resulted and with the second and last childbirth three years later the fistula followed. While the fistula had been a constant annoyance for seven years no repair

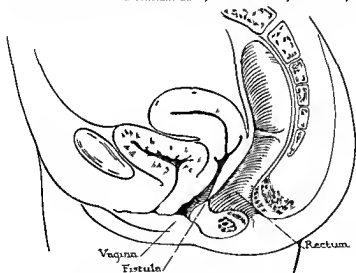


Fig. 388—Diagram of sagittal section to illustrate location of the rectovaginal fistula described in Case I.

had been attempted. The rectovaginal fistula measured 1 cm. in diameter and its vaginal orifice was situated $\frac{1}{2}$ inch within the mucocutaneous junction of the vagina whence the tract curved upward behind the internal sphincter ani muscle to enter the rectum (Fig. 388). The perineum was moderately relaxed. Repair was performed December 10, 1930 under spinal anesthesia.

Case II—Mrs F K, housewife, age forty-eight years was admitted to the hospital November 10, 1930, for repair of a rectovaginal fistula. The fistula had been acquired at childbirth fourteen years earlier. Three attempts had been made by different surgeons to repair the defect, and the tract had been cauterized once, without success. The condition had grown worse since the last operation, one year previously. On examination the perineum was fairly well supported at the fourchette, but the partition between the rectal and vaginal mucosa was thin and $2\frac{1}{2}$ inches within the vagina was perforated by three fistulae, all close together, resembling a sieve.

Operation was performed November 12th, under spinal anesthesia. The posterior vaginal mucosa was dissected free at the mucocutaneous junction, dissected backward from the rectum, and divided longitudinally in the midline back to and around the three fistulae. A cuff was made of the fibrous tissue and mucosa surrounding the fistulae by an incision circumscribing the three orifices, and a purse string suture was placed around this cuff. The cuff and fistulous tract were then invaginated into the rectum and closed as in the first case (Figs 389, 390). The levator muscles and deep fascia were then brought together in the midline between the rectum and vaginal mucosa, and the perineorrhaphy completed by suturing the mucosa as shown in Fig 390. The external sphincter of the anus was then severed by a single incision perpendicular to the length of its fibers. For ten days following operation, the patient could notice gas passing from the rectum into the vagina.

The bowel movements were kept soft by mineral oil taken three times daily and the patient remained strictly in bed for sixteen days. At the last examination, February 10th, the perineum had healed firmly without fistula and the sphincter had also healed with perfect control of bowel movement.

By cutting the external sphincter, the anus is made the path of least resistance for the fecal current, and back pressure at the site of the fistula repair is reduced. Within from four to six weeks the sphincter heals and there is no derangement of bowel control. We have on occasions cut both the internal and the external sphincter, and in each instance the sphincters regained normal function.

as illustrated in Figs 389, 390. As shown in the figures, the external sphincter was cut after the fistula had been closed and posterior perineorrhaphy performed. Examination February 20th showed the repair to be healed solid without fistula, the sphincter muscle had healed and there was perfect control of the bowel movement.

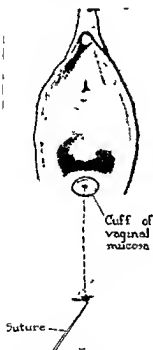


Fig 389



Fig 390

Fig 389—First step in repair of rectovaginal fistula. A cuff of vaginal mucosa is made by an incision circumscribing the orifice of the fistula. The cuff is caught in a purse string suture; the ends of the suture are brought through the fistula and out through the rectum and anus and they are then pulled taut, thereby invaginating the cuff into the rectum and closing the fistula.

Fig 390—A posterior perineorrhaphy is then performed after the usual

CHOLECYSTOGASTROSTOMY: AUTOPSY TWO YEARS LATER

THE technic of performing cholecystogastrostomy described by one of us (Mason) has been published. In the case here reported cholecystogastrostomy was performed by this technic because of carcinoma of the head of the pancreas. The patient lived two years and at death autopsy permitted us to examine the anastomosis (Figs 396 and 397).

Mr M. D., man aged seventy years, was seen in consultation with Dr. Hořichter at Providence Hospital April 10, 1928, with the complaint of indefinite indigestion and epigastric distress for the past ten to fifteen years. During the six weeks previous he had become more acutely ill, severe dis-

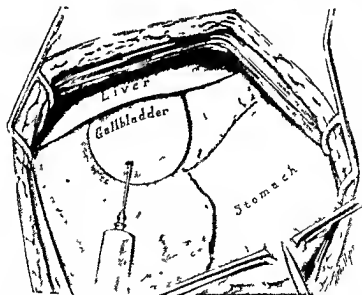


Fig. 391.—A small stab wound is made on the anterior surface of the stomach near the greater curvature. If the gallbladder is so distended that it is dangerous to grasp it with a hemostat, aspirate it with a small needle as made first.



Fig 393—The fundus of the gallbladder is grasped with the hemostat and pulled well into the stomach



Fig 394—It is fixed with a single row of linen sutures. A pair of scissors is passed through the lower opening and the fundus of the gallbladder opened

tress following food had forced him to stop eating and he had lost 70 pounds in weight. When the stomach remained empty he was fairly comfortable. Two weeks previous to consultation he had developed painless jaundice which had progressively deepened.

Examination revealed essentially normal findings except for a moderately deep jaundice of the skin and sclerae, fullness in the epigastrium, and a palpable gallbladder.

At operation April 12, 1928, a tumor the size of an English walnut was found involving the head of the pancreas and there was one metastatic nodule the size of a pea on the under surface of the liver. This metastatic nodule was removed with the cautery and it proved to be malignant. The gallbladder was large and the common duct was dilated. The gallbladder was freed from the liver bed and anastomosed with the stomach after the technique described in Figs. 391 to 395.

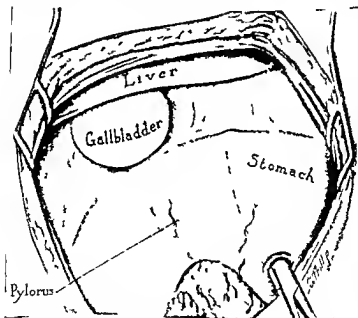


Fig. 395.—A curved hemostat is passed through the stab wound to the site selected for the anastomosis.

new growth in the mucosa. Posteriorly a few large masses were found in the region of the head of the pancreas. As stated the common duct was enormously dilated. The liver in general was nodular and on sectioning these nodules were found to be filled with a thick purulent material. Aside from these gross findings no other pathology of interest was found.

Microscopic examination of the nodules throughout the liver showed them to be filled with pus with a marked infiltration of the surrounding tissues with polymorphonuclear leukocytes and mononuclear cells. It was surprising that no cancer cells were found in any of the sections examined from

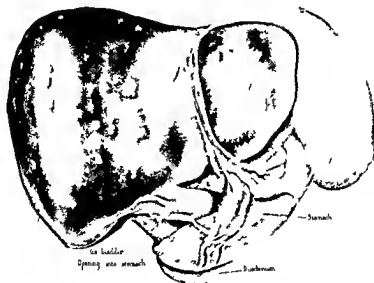


Fig. 396—Artist's drawing of the anterior superior aspect of the liver and the anastomosis of the gallbladder with the stomach found at autopsy two years after cholecystogastrostomy was performed. Multiple abscesses involve the liver.

the liver. However the nodules at the head of the pancreas showed large circumscribed areas with much cellular degeneration and only a small amount of pancreatic tissue. No distinct carcinoma cells could be recognized. Section of the mass found in the duodenum showed distinctly an adenocarcinoma involving the mucosa and the underlying structures.

The secondary infection in the liver manifested itself clinically eight weeks before death. In all probability it arose as an ascending infection traveling from the stomach by way of the cholecystogastrostomy to the liver. Mann of Rochester, Minnesota, who happened to be visiting here at the time of this patient's death, stated that he found death in the experimental animals fol-

Convalescence from the operation was uneventful and the patient was relieved of his gastric distress, came to enjoy his meals and to gain somewhat in weight, and was able to look after his business interests. After five months he consulted us for occasional slight distress at midnight. This was relieved by midnight feeding. He continued active until about January, 1930 when he began to have fever and toxic manifestations to lose weight and for the first time to develop a tinge of jaundice again. In February he read in the newspapers of the Coffey Humber treatment for cancer and wished to try their injections. He therefore went to San Francisco and from February 11th to 26th received six injections of their extract of adrenal cortex. He went down hill rapidly during this period and became markedly emaciated,

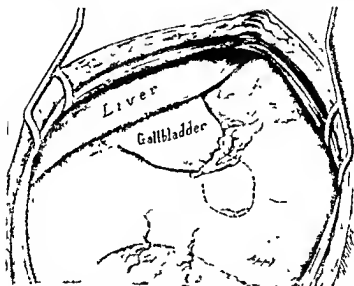


Fig. 395—Completed operation. A small amount of fat from the gastrocolic omentum reinforces the anastomosis.

definitely jaundiced and septic. He returned to Seattle March 1st in coma and died soon afterward. Figures 396-397 are drawings made by Miss Phillips at autopsy.

As seen in these drawings the stomach was greatly elongated possibly

head of the pancreas. On opening the duodenum, there was found a large

new growth in the mucosa. Posteriorly a few large masses were found in the region of the head of the pancreas. As stated the common duct was enormously dilated. The liver in general was nodular and on sectioning these nodules were found to be filled with a thick purulent material. As de from these gross.

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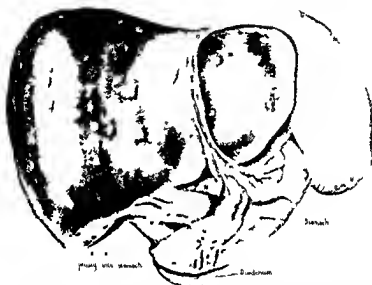


Fig 396—Artistic drawing of the anterior superior aspect of the liver and the anastomosis of the gallbladder with the stomach found at autopsy two years after cholecystogastrostomy was performed. Multiple abscesses involve the liver.

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lowing cholecystogastrostomy or cholecystoduodenostomy pretty generally to be due to an ascending infection by way of the anastomosis. This man was in serious condition from obstruction of the common duct at the time the

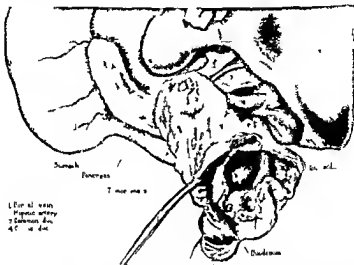


Fig 397 Another drawing of the specimen shown in Fig 396. The stomach has been opened along the greater curvature to show the opening of the gallbladder in the anterior wall of the stomach.

cholecystogastrostomy was performed. This procedure undoubtedly added almost two years to his life, and of this two years he enjoyed about twenty months of fairly good health and happiness.

CLINIC OF DR A ALDRIDGE MATTHEWS

ST LUKE'S HOSPITAL SPOKANE WASHINGTON

SUBARACHNOID BLOCK—100 CONSECUTIVE CASES

SUBARACHNOID block, more generally spoken of as spinal anesthesia, is fast supplanting inhalation anesthesia especially for those operations below the diaphragm. I feel that this is rightly so, for the danger and complications of this anesthesia are less and relaxation is complete making operative procedures easier and reducing trauma by lessening the use of packs and retractors. Spinal anesthesia has come to stay as it has advantages for both patient and surgeon.

In this report I wish to refer to a hundred consecutive operations by this method. There were no serious complications in any way attributable to the anesthetic. In this series there were three deaths, which I will report briefly.

Case I

death

monary artery which originated in the right femoral and iliac vein

Case II—Female age forty two years. Abdominal hysterectomy four days previous. Seven days previous a cholecystectomy with normal convalescence.

death

the embolus

A short

veins for her

Case III—Female age forty five years. Perineorrhaphy and abdominal hysterectomy were done seventeen days previous to death. Up and about the hospital and had been ordered home two days before but on account of conditions at home wanted to remain a few days longer. I saw and talked to her ten minutes before death and she apparently was perfectly well. A postmortem revealed a pulmonary embolus.

It is rather a strange coincidence that these three deaths should occur in close succession and from the same cause

In 5 cases it was necessary to use nitrous oxide to complete the operation, and two of these deaths were those cases. In the first case, a prostatectomy, I placed a pack in the prostatic pouch, which was removed thirty six hours later, under gas anesthesia. All 3 cases had nitrous oxide gas, but I can see no reason why this should have any bearing on their deaths, and regard it as a mere coincidence.

The technic followed in these cases was that of Dr. Gaston Labat. In about the first half of these cases I used ephedrine $\frac{3}{4}$ grain, hypodermically, thirty minutes before injecting the neocaine and had a less drop in blood pressure as a whole, but in the last of these cases I eliminated the ephedrine, and feel that my patients got along just as well. On several occasions I have used normal saline intravenously when the blood pressure dropped very low which caused it to rise immediately. These patients seemed in good condition, with that exception. The heart sounds were distinct, slow and regular. In other words the heart muscle itself seemed unaffected. The condition was apparently due to a splanchnic paralysis and dilatation.

These patients were singularly free from headaches and no severe ones following operations. A number of them were nauseated and some vomited but this was usually after they had returned to their rooms.

Labat emphasizes that the danger in spinal anesthesia is not from the fall in blood pressure except that it produces a cerebral anemia which he attributed to the increased volume of blood in the viscera, due to a splanchnic paralysis and vasomotor collapse. He expresses the belief that this cerebral anemia can be avoided by placing the patient in the Trendelenburg position immediately following the intraspinal injection. By this procedure the brain will be kept amply supplied with blood and irremediable respiratory failure will be avoided.

— of cases the

tion the average dose being 0.12 Gm. Thirty minutes before the operation morphine sulphate $\frac{1}{2}$ to $\frac{1}{4}$ grains is given hypodermically.

There are few contra indications to the use of spinal anesthesia. Very nervous or mentally unstable patients or one who is strongly prejudiced against its use rarely do well under it. Not that there is a greater risk of life with these patients but they will complain even though there is every evidence that the anesthesia is good and then may become hysterical. In patients with a marked hypotension and lesions of the brain and spinal cord this procedure should not be used. I feel rather skeptical about using it in the very young but have had no experience with it in these cases. I note that some authors recommend its use regardless of age.

W. J. Mayo¹ says 'Spinal anesthesia has the great advantage in cases of probable intestinal obstruction in that if no mechanical obstruction exists gas and perhaps intestinal content will pass by rectum within fifteen or twenty minutes. Therefore if gas and intestinal content is not passed after a spinal anesthesia has been administered mechanical obstruction may be assumed to be present and advantage of the anesthesia can be taken for immediate operation.

One is impressed when opening the abdomen by the complete relaxation. The intestines are contracted instead of protruding through the wound as is often the case in inhalation anesthesia. One can get a good general inspection of the abdominal content with very little retraction of the belly wall. Consequently abdominal surgery is much simplified. After operating under spinal anesthesia with such splendid relaxation one is reluctant to go back to a procedure more difficult both for the patient and the surgeon.

It is not unusual to complete a short abdominal operation such as a herniotomy or appendectomy and have the patient ask when he is to be operated upon. One woman upon whom I was doing a hysterectomy said she felt like singing which I invited her to do. She sang several songs during the operative procedure incidentally having a good voice so her concert was enjoyed by all.

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In this series of cases the injections were made from the last dorsal to the fourth lumbar vertebra, the dose depending upon the size and age of the patient and the character of the opera-

relaxes completely and the bowels contract. As a consequence if there is loose fecal matter in the rectum it will be expelled. In my earlier experience I have had this happen. It is not unusual to hear gas being expelled from the anus and fecal odor noticeable during an operation under spinal anesthesia. In doing hysterectomies the patient being in a Trendelenburg position if any fecal content be expelled there is great danger of directly contaminating the vagina with a possible development of peritonitis.

As to the mortality in spinal anesthesia I regard it as less frequent than from inhalation anesthesia. Especially am I alluding to ether for that is the generally used anesthesia for complete relaxation. The complications of ether anesthesia are remote while in spinal they are immediate. Koster and Wentrob¹ quoted several authors as to their mortality from spinal anesthesia. These cases are tabulated as follows:

	Spinal anesthesia	Deaths
Duvergney	2 256	1
Jonesco	5 481	0
Dujarier	4 000	4
Cauchon	500	1
Plisson and Clavelin	1 011	0
Lepoutre	500	0
Leclerc	300	0
Labey	680	3
Sauve	1 000	0
Choflan	1 000	0
Riche	3 539	1
	<u>20 267</u>	<u>10</u>

In the study of individual deaths it was found that many of these could not be attributed directly or indirectly to spinal anesthesia.

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- 2 Koster H and Wentrob M Spinal Anesthesia Fatalities Amer Jour of Surg 1930 vol x No 2 p 234

The sensation disappears before a motor paralysis is complete, as the patients can wiggle their feet, but have no abdominal sensation, this probably being due to the selective affinity which the sensory nerves have for the drug.

I want to emphasize the importance of keeping these patients in the Trendelenburg position so that the brain will at all times be well supplied with blood for splanchnic dilatation may be great and the only way the heart can be supplied with blood is by gravity and then pumped to the brain, in which gravity plays an important part. Otherwise a fatal bulbar or cerebral anemia might result, not due to cardiac paralysis, but to the inability of the heart to get sufficient blood to pump to the brain which amounts to much the same as an internal hemorrhage except that the blood is in the relaxed veins of the viscera.

Vascular stimulants here are of little value, but fluid volume to the heart should be supplied by means of transfusions of normal saline.

Cases especially suited to spinal anesthesia are abdominal operations of all kinds especially those of the lower abdomen hypertension pulmonary cardiac or any operative procedure or the reduction of fractures of the lower extremities.

I do not want to be overly enthusiastic about this anesthetic, but I am so impressed with the results I favor it whenever possible.

I would warn against leaving vessels regardless of how small without ligating as the blood pressure is very low, and upon recovery from the anesthetic these vessels may bleed and cause a hematoma to develop.

I do not think it well to discuss the character of anesthesia with patients on account of the prejudice which existed in former years and too often the patient becomes apprehensive and worries over the matter. It is not customary to discuss with our patient what form of inhalation anesthesia you are going to use, so why discuss this form?

As to the preparation of these patients as regards emptying the bowel. This should be done the night before and no enema given on the morning of the operation, as the sphincter muscle

CLINIC OF DR CHARLES EATON PHILLIPS

HOLLYWOOD HOSPITAL, LOS ANGELES, CALIFORNIA

CECOSTOMY FOR ALLERGIC COLITIS

(Allergic Reaction by Dr G. Piness)

THE common forms of allergic reactions when typical may be readily recognized. When the sensitizations are multiple and atypical their recognition becomes increasingly difficult.

The present case furnishes a good illustration of the difficulties of recognition. This patient, for a period of ten years had been under the care of some of the best physicians in the country. Careful hospital and clinic study failed to reveal the cause of the trouble.

Mr I T was referred to me by Dr Dudley Smith of San Francisco and was admitted to the Hollywood Hospital December 27 1928. The patient was twenty four years of age single 5 feet 5 inches in height and weighed about 74 pounds. The family and previous histories were essentially negative with the exception of an almost forgotten asthmatic trouble preceding the onset of the present dysentery.

Present trouble began insidiously about ten years ago. At first there was an abnormal looseness of the bowels. This condition gradually became aggravated and ulceration developed as shown by the presence of blood in the stool. The patient soon reached a state of chronic invalidism. Year after year he merely survived chasing one cure after another until he presented a condition of emaciation almost beyond comprehension. He was sent to me for a cecostomy. There was an absolute incontinence of the bowels. Frequent stools chiefly composed of bloody mucus were accompanied by severe tenesmus. A temperature of 101.8 F and dehydration added to the picture. The blood showed 4 530 000 red blood cells neutrophils 57 per cent and hemoglobin 82 per cent. All of these figures were influenced by the dehydration.

The patient was placed on a boiled milk diet and sufficient bismuth and opium administered to control the tenesmus and give a little rest. A few days later he was given a little barium and an x ray examination was made of the gastrointestinal tract. This showed a slight pylorospasm and otherwise was negative until the colon was reached. This was found to be tubelike in

a fluff dressing was applied over the clamp and all. This procedure does not obstruct the bowel and the patient was made comfortable until the following day when the clamp was removed and the ileocecal valve prolapsed as shown in Fig 400. This sidetracks the large bowel; it allows irrigation of the large intestine if desired and also allows a gradual reestablishment of function of the large intestine by simply fixing a pad over the cecostomy opening. The intestinal contents are forced all or in part through the colon as may be desired.

Following the sidetrack, I fully expected to see a restoration of function as a result. The patient improved rapidly and was able to lie up and about after four weeks. He was discharged February 13, 1939. However, irriga-

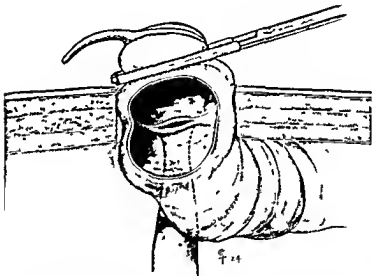


Fig 399—Shows the selected portion of the caput coli and appendix presenting through the abdominal wound. The ascending colon is fixed to the abdominal wall by a stitch to prevent a prolapse of the ascending colon and thus interfering with the protrusion of the ileocecal valve. The presenting portion of the cecum is grasped by forceps and the distal portion is to be excised.

tion and treatment of the colon failed to cure ulceration and cicatrization of the bowel continued. The ileocecal valve instead of prolapsing retracted and the enterostomy became surrounded with bleeding granulations. After about five months the cecostomy had closed to such an extent as to cause a more or less constant current through the colon and a recurrence of his former symptoms.

size and the barium was passed so rapidly that no picture could show it satisfactorily. Examination of the everts failed to show the etiologic factor. Our examination simply revealed the fact that the trouble was apparently limited to the colon.

The patient's symptoms were too urgent to permit further study. On January 4, 1929, I operated him to sidetrack the colon. The technic followed that which had been used in the case of the patient who died in June 1925.

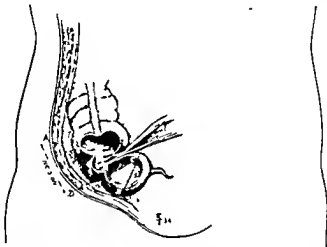


Fig 398—Shows diagrammatically the position of the ileocecal valve the caput coli the appendix and the part of the cecum (C B) which is to be stitched to the abdominal wall at (A D)

was carried directly through the abdominal wall cutting the muscular fibers rather than separating them. The incision was made about $2\frac{1}{2}$ inches in length and extending into the peritoneal cavity. The head of the cecum was brought out of the wound. This was found to be greatly thickened and was drawn out about 2 inches.

It was selected for the enterostomy.

An inch of the distal end of the parietal and visceral peritoneum

was selected for the enterostomy. The muscles and skin were also approximated to the bowel (Fig 399). The head of the cecum distal to the clamp was then cut off with the cautery. The field of operation was covered with vaseline and

A diet was prepared eliminating these foods and the patient left the hospital for his home in Ojai.

After the completion of Dr. Piness' study the improvement was startling. The only treatment was the supplying of an allowable list of foods. His improvement can be shown by the weight gained. His weight on the first admission to the hospital was about 74 pounds. Eighteen months later he had gained 50 pounds. Physically and mentally he had made equally striking progress. Instead of being an invalid he was doing work on the ranch and taking a renewed interest in life. He had considerable difficulty with the colostomy opening. Irritation caused a frequency of discharge from the opening and also abrasions of the skin. This patient contrived an ingenious arrangement consisting of a lead glass tube fitting the colostomy opening which has done much to control the movements as well as to relieve the irritation.

By diverting a gradually increasing amount of the intestinal contents through the large bowel we are gradually developing the bowel to such a size that a closure of the enterostomy opening may eventually be done and the restoration of the intestinal tract be completed.

He returned to the hospital and the cecostomy opening was enlarged July 2, 1929. It was evident that the etiology of the disease had not been found. It was on this visit that the history of antecedent asthma was ob-

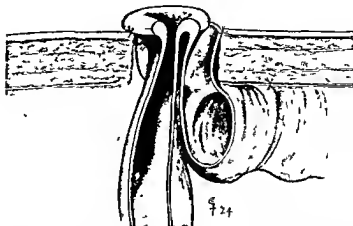


Fig 400—Shows diagrammatically the ileocecal valve prolapsed and enlarged through the abdominal wall. The opening into the large intestine is just above the ileocecal valve.

tained. Also that with the subsidence of the asthmatic symptoms there had been the onset of the dysentery. There was also the history of aggravated symptoms in certain localities. The theory of allergic reaction was the first to be considered.

Dr. George Piness was called and his studies confirmed the correctness of the surmise beyond the wildest hopes. Following is a brief account of his findings.

"As a result of skin testing the patient was found sensitive to the following foods:

"Egg white, egg yolk, green peas, string beans, celery, cauliflower, carrots, cucumber, peanuts, lamb, rabbit, turkey, salmon, English walnuts, strawberries, prunes, pineapple, peaches, pears, olive, fig, cream squash, hubbard squash, spinach, turnip, sweet potato, white potato, lettuce, Romaine lettuce, grapefruit, orange, cantaloupe, avocado, apple.

A diet was prepared eliminating these foods and the patient left the hospital for his home in Ojai "

After the completion of Dr. Pinness' study the improvement was startling. The only treatment was the supplying of an allowable list of foods. His improvement can be shown by the weight gained. His weight on the first admission to the hospital was about 74 pounds. Eighteen months later he had gained 50 pounds. Physically and mentally he had made equally striking progress. Instead of being an invalid he was doing work on the ranch and taking a renewed interest in life. He had considerable difficulty with the colostomy opening. Irritation caused a frequency of discharge from the opening and also abrasions of the skin. This patient contrived an ingenious arrangement consisting of a lead glass tube fitting the colostomy opening which has done much to control the movements as well as to relieve the irritation.

By diverting a gradually increasing amount of the intestinal contents through the large bowel we are gradually developing the bowel to such a size that a closure of the enterostomy opening may eventually be done and the restoration of the intestinal tract be completed.

CLINIC OF DR. FREDERICK LEET REICHERT

FROM THE DEPARTMENT OF SURGERY, STANFORD UNIVERSITY
MEDICAL SCHOOL

SPECIFIC TREATMENT OF POSTTRAUMATIC LOCALIZED HEADACHE BY SUBARACHNOID PNEUMOTHERAPY

THE recognition by Penfield¹ a little over three years ago of the therapeutical value of introducing air into the subarachnoid space for the control of persisting localized headaches and dizziness following trauma, quickly led to its use by others in many cases of cranial injury. As a specific method of treatment this therapeutical application of subarachnoid pneumotherapy is only satisfactory in a limited and selected group of patients in whom despite many measures a dull headache persists in a localized area, spreading to a certain extent but referred to one particular part of the head exaggerated by lifting or by any effort that would suddenly increase the intracranial venous pressure as sneezing, blowing the nose or straining at stool. Dizziness generally accompanied the headache and was frequently described as a 'lightness in the head' which would last for several minutes without any sense of rotation and usually without any evidence of nystagmus. Restlessness and fatigability may be associated with the headache.

From the report of Boyd² and others as well as from Penfield's original contribution it is evident that this specific therapeutical agent should only be employed in such cases in which the headache dated from a cranial injury and was not associated with other physical signs.

As originally described by Penfield air was introduced into the subarachnoid spaces by lumbar puncture. Less than 100 cc of air were used and the head was so held that the air entered into the subarachnoid spaces in the location of the headache.

rather than the ventricles. After the encephalograms were made the patient remained in bed with the side of the head kept uppermost where the headache was habitually most severe. With the absorption of air the headache and dizziness disappeared.

POSSIBLE MECHANISM

A disturbed circulation of the cerebrospinal fluid was suggested as the cause of these cranial symptoms. The original trauma probably produced fine adhesions and cysts in the leptomeninges which interfered with the normal circulation of the subarachnoid fluid. By replacing the fluid in the subarachnoid spaces with air these adhesions are broken up, the narrowed channels and outlets of cysts or lakes are forced open, thus improving the circulation in the normal subarachnoid region.

RESULTS

Penfield Report—Penfield secured uniform relief in seven patients by lumbar air insufflation. All seven were characterized by headache which was invariably well localized and accompanied by momentary attacks of dizziness. The complaints dated from the time of a cranial injury four weeks to eight years earlier. A skull fracture was proved in 3 of the 7 cases. In 3 cases the site of the headache corresponded with the site of the blow. The amount of air injected varied from 42 to 95 cc. The immediate reactionary headache lasted from three to nine days after pneumotherapy. The encephalograms showed a cyst of the pia arachnoid in 3 cases and there was frank escape of air into the subdural space in 3 cases.

Boyd Report—Boyd reported success in seven of the ten patients treated. The three failures were frank neuroses and two were relieved by cash settlement of their injuries. He believed that patients with definite cerebral damage should not be so treated or at least late in the progress of the condition. Little benefit and possibly harm might be done to those patients who showed a developing neurosis or psychoneurosis. He felt that a thorough trial of conservative methods should be made before air was tried, since the insufflation was more successful used late

rather than early after the trauma. In Boyd's series pneumo therapy was done twenty four hours to seven months after the injury. The headache following the introduction of air lasted from two to eight days. From 50 to 100 cc. of air were introduced into each of his ten patients. He concluded that air insufflation offered a specific method of treating bona fide post traumatic headache if the patients were properly selected.

Author's Report—In my series of six patients carefully selected as belonging to this syndrome, late results varying from four months to two years and ten months after treatment showed complete relief of symptoms in 4 cases. The one patient (Case II) whom we were unable to locate after leaving the hospital although free of symptoms, was undoubtedly treated too soon after the injury and the psychic element was apparently a definite though not the entire factor in her condition since the encephalograms indicated an organic basis for her headache. Another patient (Case VI) in whom only 30 cc. of air were injected was entirely relieved for two months when a slight return of the localized headache appeared which however, did not interfere with his work. Five of the 6 cases (except Case V) had dizziness associated with the headache. In 3 cases the headache was right temporal in two frontal and in one occipital. The duration of symptoms before treatment varied from six weeks to two years. The duration of headache after pneumo therapy was from one to four days. The amount of air introduced varied from 30 to 65 cc. and was from 5 to 15 cc. less in amount than the fluid withdrawn. Replacing the fluid by a smaller volume of air may have been a factor in reducing the severity and duration of the insufflation headache. Another factor may have been the relatively small amount of air used in the treatment.

TECHNIC

The technic for subarachnoid pneumo therapy is essentially that of Dandy³ as modified by Penfield. Careful neurological examination in each case indicated no evidence of any increased intracranial pressure and therefore a relative freedom from danger in performing air insufflation by lumbar puncture. The

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for a longer time than ten minutes. He was unable to concentrate and his marks were low. He reentered school in January, 1928 but as the headache and dizziness became worse he was referred to Lane Hospital for further study. The left occipital region was irregular and tender. Roentgenograms indicated radiating lines of an old fracture in the left occipital region. Perimetric fields were normal except for a small scotoma in the temporal field of the right eye. The neurological examination was negative. Wassermann reaction was negative.

On April 5, 1928, 15 cc. of air were introduced into the cerebral subarachnoid spaces after 30 cc. of fluid were removed. The patient laid in bed on his face in order that the air would remain in the occipital regions. The headache from the pneumotherapy subsided in four to five hours and the following morning the patient read for three hours without difficulty.

Although he was over 50 per cent improved he returned May 14, 1928 because of slight dizziness and some occipital headache. On this day 40 cc. of air were introduced replacing 45 cc. of fluid. The insufflation headache lasted two days. On discharge May 17th, he was entirely free of his headache and dizziness and has remained so until the present some two years and ten months after treatment.



Fig. 401—Case 11. Posttraumatic frontal headache and dizziness duration six weeks. Subarachnoid pneumotherapy 45 cc. of air replaced 50 cc. of cerebrospinal fluid. Encephalogram shows enlarged subarachnoid channels over the frontal region.

simplest means of introducing air into a localized portion of the cerebral subarachnoid spaces is by replacing with air the cerebrospinal fluid in the spinal subarachnoid spaces via a lumbar puncture needle. With the patient lying on his side on a stretcher and the head and shoulders elevated by pillows the air will course cephalad and enter the basal cisternal system of the cranium provided the brow is rotated up about 45 degrees. If the headache is rightsided the patient is placed on his left side so that the right side of the head is uppermost. By introducing two lumbar puncture needles an interspace apart a manometer may be attached to one and a syringe fitted with a three way stopcock and rubber tubing attached to the other. Small amounts of fluid (5 to 10 cc) are slowly withdrawn and replaced by air until the required amount of air has been injected. With the manometer attached throughout the whole procedure the pressure need never rise above normal and at the end of the treatment sufficient fluid is withdrawn to leave the pressure lower than normal. This will tend to lessen the headache from the air insufflation since the slightly irritating properties of the air tend to increase the secretion of cerebrospinal fluid. As the air is absorbed from the subarachnoid spaces the headache decreases. The patient is put flat in bed with the part of the head where the headache was located kept uppermost as much as possible. Roentgenograms may be taken if desired. They usually reveal abnormalities in the subarachnoid spaces in the region of the headache.

CASE REPORTS

A synopsis of the 6 case histories is appended.

Case I. R. S. age fifteen years schoolboy. Referred by Dr. N. B. Gould of Modesto, California. Dizziness and occipital headache for eight months.

On June 20, 1927 the patient was thrown from a horse falling on the
 e accident
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 when he
 toms. In

September he was advised to stop school because sudden changes in position induced dizziness and the persistent occipital headaches prevented reading.

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Fig. 401—Case II. Posttraumatic frontal headache and dizziness duration six weeks. Subarachnoid pneumotherapy 45 cc. of air replaced 50 cc. of cerebrospinal fluid. Encephalogram shows enlarged subarachnoid channels over the frontal region.

Case II—Mrs A V age twenty-eight years Greek housewife Admitted November 4 1928 because of frontal headache and dizziness

Six weeks before admission the patient was hit upon the head by her husband and rendered unconscious for thirty minutes She was in a hospital for eleven days and then discharged with generalized headache most severe in the frontal region, and dizziness Roentgenograms indicated a fractured skull The neurological examination was negative The psychiatric investigation indicated a beginning posttraumatic psychosis superimposed on an organic condition The Wassermann was negative

On November 4th 45 cc of air replaced 50 cc of fluid The encephalograms indicated enlarged subarachnoid spaces over the frontal region (Fig 401)

On November 6th the patient was discharged against advice free of headache and dizziness Efforts to trace the patient have not been successful

Case III—M N age twenty years Telegraph messenger Attacks of right temporal throbbing with dizziness and staggering for fourteen months

On June 10 1928 the patient was thrown from his motorcycle momentarily rendering him unconscious Three days later a spicule of bone from a depressed fracture of the right parietal region was removed from the cortex and a small decompression left in this region After resting at home for two months he attempted work but found that he had attacks of dizziness and staggering associated with a throbbing ache in the area of decompression These attacks occurred many times daily and had persisted unchanged for fourteen months limiting his occupation to part time office work The neurological examination and Wassermann were negative

Subarachnoid pneumotherapy was performed on October 29 1929 when 45 cc of air replaced 55 cc of fluid His head was so held that the air entered the subarachnoid spaces in the right parietal region Encephalograms showed

treatment

Case IV—J A O age fifty two years painter Referred by Dr J J Kirwin of Ukiah, California Dull persistent right temporal headache with dizziness of ten and a half months duration

On December 8 1929 the patient was in an automobile accident when he was struck on the head and rendered unconscious for three hours and semi comatose for eight hours He remained in bed twenty days but a constant dull right temporal headache persisted Weakness dizziness and the localized headache prevented his working as painter and paperhanger At times the pain became more severe and would radiate to his right eye and jaw Rest and various medications failed to give any relief There was slight evidence of generalized arteriosclerosis The Wassermann reaction was negative

Subarachnoid pneumotherapy was done October 29 1930 when 45 cc of air replaced 60 cc of cerebrospinal fluid. Encephalograms (Fig 402) showed air within normal appearing ventricles and enlarged subarachnoid spaces in the right temporal area. Headache and fullness of the head lasted



Fig 402—Case IV. Posttraumatic dull persistent right temporal headache with dizziness of ten and a half months duration. Subarachnoid pneumotherapy 45 cc of air replaced 60 cc of cerebrospinal fluid. Encephalogram shows air within normal appearing ventricles and enlarged subarachnoid spaces in the right temporal area.

a day after insufflation. He was discharged November 3d free of headache and dizziness. Seven months after pneumotherapy the patient wrote that he had remained entirely free of any headache or dizziness and had returned to work.

Case V—W. G., age twenty-eight years, radio mechanic. Persistent bilateral frontal headaches for four and a half months.

The patient was in an automobile accident July 16 1930 when he received fractures of the nasal bones. He was not unconscious but suffered from persistent frontal headaches for the relief of which he underwent several operations upon his nose and sinuses without any improvement. Aside from the physical deformity of his nose the general and neurological examinations were negative. The Wassermann reaction was negative.

Subarachnoid pneumotherapy was performed November 28 1930 when 65 cc of air replaced 80 cc of fluid. The encephalograms (Fig 403) indicated enlarged subarachnoid spaces over the frontal lobes. Severe headache per-

sted for four days after pneumothorapy but had disappeared before the sixth day. He was discharged December 5th entirely relieved of headaches and was free of any recurrence when last seen March 24, 1931, four months after treatment.



Fig. 403. Case V. Posttraumatic persistent bilateral frontal headache for four and a half months. Subarachnoid pneumothorapy 65 cc of air replaced 80 cc of cerebrospinal fluid. Cephalogram shows enlarged subarachnoid spaces over the frontal lobes.

Case VI. A Z., age twenty-eight years, Italian railroad foreman. Localized right parietal headache and dizziness for two years. There is no definite history of the onset of localized headache following a single trauma but in the past four years the patient has been in a number of fist fights with several momentary periods of unconsciousness. About two years ago a nonradating daily right temporal headache developed which was worse at night and which would force him to rest frequently from work, especially if he had been stooping. Associated with the headache were momentary dizzy spells which came usually in the morning or after stooping. There were occasional attacks of buzzing and ringing in the right ear. He complained of some failure of

air entered the subarachnoid spaces in the right parietal region. Severe localized headache lasted for three days after the insufflation. He was discharged January 17th since when he has been entirely free of his symptoms for the first time in two years. He endeavored to induce the headache by the usual means including a drinking bout but it did not return. He had been at work for over a month when he wrote March 12th that a slight return of the localized headache had just appeared but that it did not interfere with his work nor did he feel that another treatment was necessary.

SUMMARY

Penfield first described the syndrome of posttraumatic headache based on a history of a localized, dull persisting headache associated with transient attacks of vertigo, the onset of which is related to a cranial injury.

The specific treatment for this condition lies in the air insufflation of the subarachnoid spaces in the region of the headache.

A review is given of the report of Penfield's 7 cases and the 10 cases of Boyd.

Six more selected cases are reported. Four cases that have been followed from four months to nearly three years after treatment have remained entirely free of symptoms. One case could not be traced after discharge from the hospital. A recent case although not completely relieved, was improved about 80 per cent.

In the author's cases the duration of the immediate headache following insufflation was shortened by introducing a volume of air less in amount than the fluid withdrawn.

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CLINIC OF DR SAMUEL ROBINSON

FROM THE SURGICAL CLINIC OF THE SANTA BARBARA COTTAGE
HOSPITAL, SANTA BARBARA, CALIFORNIA

A CASE OF ACUTE INTESTINAL OBSTRUCTION FOLLOWING RECENT LAPAROTOMY

It is a reasonable assumption that anybody who has had an abdominal operation weeks or months or years before, who is suddenly seized with acute intermittent abdominal pain and vomiting, may have acute obstruction of the small intestine from an adhesion band. But alas this glaring probability does not always occur to us at the time, hence many unnecessary fatalities.

The proper time for opening the abdomen in cases of acute intestinal obstruction is long before one is entirely convinced that such a condition exists. By the time the "text book" symptoms stare one in the face it is generally too late to operate and cure. And by "text book" symptoms, I mean fecal vomiting, visible peristalsis, great distention, and a pulse of poor volume. The earlier indications are far more subtle. As we stand by the bedside of a person thus afflicted, talking to him and watching his abdomen, it is obvious that there is something distinctly wrong with him, something out of the ordinary. His face shows it, his story reveals it. Always he is nauseated. As you converse with him he may seem comfortable when suddenly he interrupts your interrogations by going through a spasm of truly agonizing pain. Within perhaps a minute he is quiet again and continues to tell his story. If your hand happens to be resting upon his abdomen during one of these crises, a fulness or a firmness may be detected in some certain area. Passage of gas

from one coil of bowel to another may be felt and often heard. Then all is quiet again. Strangely enough this well known syndrome which is strikingly telltale often is overlooked.

The patient whose illness I am describing is a woman of forty five. Five weeks before I had performed a Gillian suspension operation for a retroverted uterus. There had been nothing unusual in her convalescence either in the hospital or during her first week at home. Then one morning she ate no breakfast. She was nauseated. During the morning she had attacks of quite severe abdominal pain. Vomiting came on with increasing frequency. The pains occurred more frequently until at 4 o'clock in the afternoon a physician in the country was called to give relief which he provided in the far too customary manner by promptly giving a hypodermic injection of morphine and hyoscine. Later he informed me that he administered the potion to relieve vomiting, that he was not aware that she had been in pain, that he had made no abdominal examination. I arrived on the scene at nine in the evening. Having been guilty on more than one occasion in the past of negligencies and ignorancies in the early diagnosis of acute intestinal obstruction and having the additional advantage of knowing of her recent laparotomy I suspected the possibility of this diagnosis before entering the house. But to my mortification I found the patient absolutely collapsed, how much from the hypnotics administered and how much from pathology I was at a loss to determine. She could not be roused and yet her pupils were not contracted and her respirations only moderately slowed. There was no pulse at the wrist. No blood pressure could be recorded. The abdomen was entirely relaxed. There was no distention. There was no tenderness. I learned from the husband the details of the story of the day, but of course nothing could be learned from the patient as to the character or location of the pain. Had it not been for something discovered in the left lower abdomen I could have had no support to the suspicions which the history alone had aroused.

To the left of the middle line and below the umbilicus was an area larger than the palm of the hand which felt different

from the rest of the abdomen, as though something of a doughy consistency lay there under the abdominal wall. The rest of the abdomen seemed to have normal tympany but over this area there was a suggestion of dulness on light percussion. And that was all.

Then came the usual additional delay in transporting the patient 14 miles to the hospital. Various enemas were then given with no escape of gas and no change in the appearance or feel of the abdomen. Meanwhile there was a return of consciousness but not of pain. The wrist pulse and blood pressure were still absent. The hope that these might return when the effect of the morphine had passed proved a forlorn one and it became probable though not certain that the woman was in extreme collapse from some intraperitoneal tragedy.

And so it proved at the operation done at three in the morning some eighteen hours after the onset of symptoms.

There was free fluid. Small bowel presented. There were coils pale and collapsed. In their midst were others beef red in color. It was difficult to deliver them from the abdomen until finally a tough band leading somewhere into the pelvis was broken and the mass of encarcerated coils was suddenly liberated and laid upon the abdomen. The color was unusual. It was more red than blue. The surface was not glistening. There was distinct swelling of the intestinal walls and a doughy feel as though from edema. Along the mesenteric attachment of the involved section of gut was ecchymosis extending some 2 inches from the intestinal border in the direction of the root of the mesentery. This discoloration under the mesenteric peritoneum was brownish in color. At first I thought that we were dealing with mesenteric thrombosis but assumed that the whole fan of the involved mesentery should be discolored and not merely its distal portion. It was quite obvious that the lumen of the involved section of gut was obstructed by the congestion and edema and there seemed no hope of restoration of continuity at least until after there had been a lethal absorption from the contents of the damaged bowel.

To replace the released bowel into the abdomen seemed in

conceivable. Resection was the only alternative although the desperate condition of the patient little warranted it. The intestine proximal to the strangulated section was not distended and as long as a resection of the toxic section of bowel was to be done I abandoned all thought of milking the whole length of the bowel by the method of Holden. I also feared to spend any time in doing an anastomosis with an accompanying ileostomy. I therefore chose the obstructive type of resection as the best. Between Payr clamps I removed $3\frac{1}{2}$ feet of ileum and brought the clamped ends out of the wound and sutured the wall hastily around them. There being no distention I deterred the introduction of a catheter into the proximal end until the patient might recover from the shock of the strangulation and of the operation.

Three hours after the operation a faint and rapid pulse could be felt in the wrist. This improved under the stimulation of intravenous, subcutaneous and rectal fluids.

Twelve hours after the operation the Payr clamp on the proximal end of small bowel was loosened and slid along to occupy only one half of the lumen. Then a catheter was inserted and the clamp reclosed. Strangely enough peristalsis returned with only a short period of ileus. Gas and liquid bowel contents came freely through the catheter.

On the third day recovery was promising. Obviously the liquids taken by mouth were not being absorbed but lost through the ileal drainage. Dehydration was unmistakable and increasing. The catheter in the proximal end was then looped over and inserted into the distal end. Absorption of liquids and chlorides from the large bowel was thus made possible and the dehydration became strikingly less marked.

On the fifth day leakage commenced around the catheter in the proximal barrel. Again no small bowel contents could pass through the catheter into the distal end and thence to the large intestine. A larger catheter was sutured into the proximal end and connected with tubing to a bottle. With a catheter and funnel the contents of the bottle was poured every three hours into the distal barrel of the ileostomy. Again the patient's condition improved and liquids by mouth were absorbed.

There was much infection of the wound, also increasing dermatitis from the leaking small bowel contents

Ultimately it became impossible to retain a catheter in the proximal barrel and dehydration again recurred

It was then only twelve days since the resection operation. The situation was difficult. To undertake an anastomosis through an extensively infected wound was dangerous and yet it was obvious that from day to day the patient's resistance to further operation would be less. To make up for loss of bowel fluid absorption by hypodermoclysis or intravenous absorption was no longer possible. The patient's tolerance to these treatments was exhausted. The use of a compression clamp to establish a connection between the bowel ends of the double barrelled ileostomy did not seem feasible. The ends were not in good approximation, one end had definitely retracted.

Operation was done on the thirteenth day. The abscess between the skin and the fascia was cleaned up and sterilized. The presenting ends of small intestine were removed and the freshened ends closed. A lateral anastomosis was made at the ends.

Peritonitis did not result from this operation although of course the superficial abdominal wound was again infected. The convalescence was not stormy.

On the twenty fifth day after this operation the patient returned home with a small skin opening at the lower end of the wound which closed in ten days.

Four months after operation the patient is entirely free from symptoms of any sort.

One cannot deny that there was much favorable luck in the successful outcome of this case.

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CLINIC OF DR. L. W. ROCKLY

GOOD SAMARITAN HOSPITAL PORTLAND OREGON

ABSENCE OF URINARY SPHINCTER RELIEVED BY A PLASTIC OPERATION

I wish to present a girl fourteen years of age who has always been generally well. She was born without any urinary sphincter. Three years ago she was taken to a clinic in the Middle West and there a very competent surgeon transplanted her left gracilis muscle around the urethra. Unfortunately the wound became infected and not only did she fail to secure sphincteric control but she developed a stricture of the external meatus. This narrowed down to the point of causing complete obstruction and on these occasions it was necessary to take her to a hospital and forcibly dilate this contracted meatus. Because of the failure of this attempt to give this girl urinary control it had been urged upon her that she have the ureters transplanted into the rectum. I felt that another attempt should be made before the irrevocable step of ureteral transplantation should be seriously considered.

On March 14, 1930, I cut through the stricture in the long diameter of the urethra and sewed it up in the opposite direction with fine black silk sutures. Following this sounds were passed and the urethra stayed well open. On July 8, 1930, I transplanted the right gracilis muscle after I had tunnelled completely around the urethra without opening it. The muscle was sutured to itself around the urethra with No. 00 chrome mattress stitches.

She obtained good urinary control and has had it ever since the operation. The urethra pulled free from the modified skin of the introitus at its anterior edge and there was some granulation tissue at this spot which was exuberant. This was trimmed off. In spite of the passage of sounds the urinary meatus narrowed down again. I then made radial cuts around the meatus and kept it open. A 26 French sound passed with ease to the bladder. This girl who had never been able to control her urine and had always had to wear canvas pants with pads is now able to keep herself dry and comfortable.

Here we are dealing with a muscle which has readily adopted the function of the urinary sphincter. The urinary sphincter is normally a voluntary muscle, not an involuntary one. This is a fact which some of us frequently overlook.

CARCINOMA OF THE LARYNX

THE next case is one that teaches several lessons. In addition to any surgical lesson that may be learned from it is the great one of courage.

This man, who was referred by Dr John W McCollom of Portland was a travelling salesman sixty six years of age. He had a cancer of the larynx, which had developed to the point of causing marked symptoms. Not only was there the intrinsic growth within the larynx, but there were definitely palpable glands on the left side of his neck. Were we in this case merely to resort to radium treatment, or to do a laryngofissure, thus opening the larynx and exposing the growth and attempting to remove it without removing the larynx or were we to do a complete laryngectomy? The growth was extensive and could be viewed with ease with a mirror so that it seemed to me that any partial operation was doomed to failure and while radium might give him temporary relief there was little hope that this relief would be of long duration. It was therefore decided that a total laryngectomy should be done.

On July 25 1928, this operation was performed in one stage. The trachea was freed from its surrounding tissues and divided below the larynx and brought out through a buttonhole incision in the suprasternal notch and sutured there. The larynx was now freed from the esophagus posteriorly by a combination of blunt and sharp dissection great care being taken to avoid undue traction or traumatization which might stimulate the fibers of the vagus nerve. The cornu of the thyroid cartilage was cut across. The thyrohyoid membrane was now incised on the right side and the inside of the pharynx inspected. Hugging close to the thyroid cartilage the pharynx and the esophagus were opened on the right side. The cancer had originated apparently above the false cords on the left side extending above the larynx on the lateral wall of the pharynx. It was over 1 inch in diameter involving the epiglottis at its base. The dissection was now carried down

were now closed with interrupted No 000 chromic catgut sutures. A two layer approximation was made with great care and a satisfactory closure obtained. The skin was approximated with silkworm gut.

He made a good convalescence and two weeks later I did a dissection of the left side of the neck removing all the glands and lymph bearing tissue in the submaxillary and posterior jugular triangle of the neck. The glands which were removed were both macroscopically and microscopically carcinoma. He was later given a thorough course in deep x ray therapy.

CLINIC OF DR A J SCHOLL

ST VINCENT'S HOSPITAL LOS ANGELES CALIFORNIA

HYDRONEPHROSIS WITH REPORT OF FOUR PERSONAL CASES

THE commonest form of hydronephrosis is that in which the dilatation of the kidneys begins at the ureteropelvic juncture. Symptoms generally appear in early adult life the condition may be intermittent and extend over a period of many years.

PATHOLOGY

White¹ states that the earliest cases show narrowing of the ureter from chronic inflammation which appears to be the cause of the dilatation. In all cases pyelitis and moderate chronic interstitial nephritis are associated. Mercier² concludes from his experience of the etiology and treatment of hydronephrosis that most cases are produced by pelvic or ureteral membranes and lowering of the kidney from 1 to 2 cm. from some undetermined cause. The juxtapelvic portion of the ureter being fixed by membranes which are probably congenital in origin the pelvis becomes either horizontal or oblique and this tends to create a pelvic fundus. As a consequence of this position the pelvis must increase the power of its contraction in order to empty normally which in turn diminishes the contractile power urine accumulates and hydronephrosis results. Mercier believes that nephropexy is the logical operation for some hydronephroses because it reestablishes the normal position of the pelvis toward the ureter. Marion³ obtained good results in treating a number of cases of hydronephrosis by liberating the ureter at its superior position and fixing the kidney as high as possible. He states that some cases are not due to a narrowing of the ureter.

When I proposed removing his larynx and told him he would never talk again he said to me that as he had been a travelling salesman he had done his full share of talking and could get along all right without it. However, he has not remained mute.

I want to say at this point that I learned something definitely about tracheotomy openings from this case and that is that the opening must be large. The ordinary tracheotomy opening is not nearly large enough to give the individual enough air to carry on the normal activities of life. In this case we had dyspnea which was marked on exertion. I had an extra large tracheotomy tube made (he is wearing it now) that is 40 French in size and I dilated the opening by multiple radial incisions sufficiently to permit its introduction. Since he has worn this he has had no dyspnea on exertion and has been much more comfortable. This large tube was introduced in December 1928.

The Western Electric Company on a plan suggested by Dr John E. MacKenty of New York developed an artificial larynx one of which we obtained for this man. With it he was able to talk. He then experimented with various forms of speaking apparatus. He has made many an artificial larynx himself. One is made with a common spool and a piece of rubber glove wrist and a piece of rubber tube. He speaks very well with this. He also uses a bellows and also a Ford horn. He can whistle and talks well over the long distance telephone.

Examination February 1931 showed no evidence of any recurrence in the glands of the neck. He is hale and hearty.

As I said before there is a great lesson to be learned from this case and that is the one of courage. Here is a man who lost his larynx and might as many or most have done gone about mourning his luck and feeling sorry for himself but he has not done this. He has kept on at his work tending to his orchard with a courage and optimism that is really marvellous. He has a good time enjoys life and by his striving has overcome very grave obstacles.

divided close to the sinus of the kidney and turned back over the capsule. This makes it possible to pull the kidney and the vessels through the enveloping capsule, and to ligate the vessels directly.

Transperitoneal Nephrectomy—The distended kidney may present as an abdominal tumor, especially in children or it may be adherent to the under surface of the liver, to the diaphragm, or to the colon, making an anterior exploration essential. After the peritoneal cavity has been opened the posterior peritoneum is incised laterally to the ascending or hepatic colon on the right and laterally to the descending colon on the left. In most cases the colon will be crowded markedly toward the middle line by the renal mass. Usually the renal vessels can readily be caught and ligated.

The following personal case is one of simple extraperitoneal lumbar nephrectomy for uncomplicated hydronephrosis. It illustrates the ordinary routine procedure used in these cases and is of interest on account of the unusual presenting symptoms and the clear cut, bizarre pyelograms.

Case I—A girl aged eighteen years had been having occasional attacks of left sided pain over a period of five years. The pain was from two to ten hours duration and usually it radiated from the left flank toward the bladder. She had four attacks in the last two years all of which were precipitated by physical exercise. Her general health was good and she had no pain between attacks though there was a sense of discomfort when she did gymnastic exercises. Two days ago her urine became bloody and she has passed numerous clots and a large amount of blood with each specimen.

On physical examination a rounded mass which felt like a large grapefruit was found in the left side of the abdomen. The mass was freely movable and palpation did not cause pain. The urine contained a large amount of fresh blood. An x ray of her kidneys and bladder showed a soft tissue tumor 12 cm in diameter in the left renal area. Cystoscopy revealed a normal bladder which contained many fine long drawn out blood clots such as would come from bleeding down the ureter. The left ureteral orifice was emitting spurts of thick bloody urine. The urine from the right side was normal in appearance. Both ureters were catheterized. Phthalein appeared from the right side three minutes after intravenous injection. 35 per cent was collected in a fifteen minute period. Nothing was obtained from the left side. Left pyelograms taken in anteroposterior and lateral positions showed a large circular tumor completely filled with opaque substance (Figs 404-407).

but to a too great fixity to the surrounding cellular tissue and to slight ptosis of the ureter

RADICAL SURGERY (NEPHRECTOMY) FOR HYDRONEPHROSIS

Recent developments in plastic renal surgery have revolutionized the method of surgical treatment of hydronephrosis especially in cases where the pelvic dilatation is of a moderate degree and there is need for conserving the remaining renal parenchyma

Until quite recently nephrectomy was the accepted method of dealing with severe hydronephroses and even at present in the majority of cases of much dilated comparatively functionless kidneys nephrectomy is the operation of choice. Usually an extraperitoneal lumbar nephrectomy is done through a posterior lateral incision. This incision affords a sufficient exposure in practically all cases. In some instances in which the kidney is very large its removal is facilitated by first withdrawing the retained fluid. The sac may then be readily peeled out through a moderate-sized incision. When the kidney is extremely large and it is desirable to remove it intact enlarging the usual posterior lateral incision anteriorly and retracting the peritoneum toward the middle line will make the kidney more accessible. Usually hydronephrotic kidneys which are not infected shell out readily. There are few adhesions the vascular supply is greatly diminished and there is but slight possibility of operative difficulty. Many hydronephrotic kidneys have abnormal vascular connections which must be looked for and ligated as they may be cut or torn during operation.

Subcapsular Nephrectomy Previous exploration or conservative operation at times causes scarring and perirenal adhesions which make it impossible to separate the kidney and its capsule from the surrounding tissues. If an operation has pre-

usually

pedicle may be either clamped through the capsule or the decapsulated kidney may be elevated and the capsule completely

divided close to the sinus of the kidney and turned back over the capsule. This makes it possible to pull the kidney and the vessels through the enveloping capsule, and to ligate the vessels directly.

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On physical examination a rounded mass which felt like a large grape fruit was found in the left side of the abdomen. The mass was freely movable and palpation did not cause pain. The urine contained a large amount of fresh blood. An x ray of her kidneys and bladder showed a soft tissue tumor 1.5 cm. in diameter in the left renal area. Cystoscopy revealed a normal bladder which contained many fine long drawn out blood clots such as would come from bleeding down the ureter. The left ureteral orifice was emitting spurts of thick bloody urine. The urine from the right side was normal in appearance. Both ureters were catheterized. Phthalein appeared from the right side three minutes after intravenous injection. 35 per cent was excreted from the left side. The left side showed a



Fig 404 — Radio showing left renal mass before injection of pyelographic fluid



Fig 405 — Pyelogram of left hydronephrosis taken immediately after injection of sodium iodide. The fluid apparently ran directly to the calyces



Fig 406—Left pyelogram taken fifteen minutes after injection of sodium iodide. The fluid has diffused more evenly throughout renal mass.



Fig 407—Lateral view of hydronephrotic mass thirty minutes after injection of pyelographic fluid.

Operation—The kidney was readily exposed through a posterolateral incision. It was dark, slightly hemorrhagic and soft. The pelvis which was markedly dilated was freed from the surrounding tissue. The entire mass felt doughy and its consistency and appearance suggested a large papillomatous tumor of the renal pelvis. The ureter and the renal pedicle were



Fig 403—Hydronephrosis secondary to anomalous rotation and obstruction at ureteral outlet. Relief is usually obtained only after nephrectomy.

clamped, cut and tied and the kidney removed. On cut section the kidney showed a large dilated hydronephrosis. The pelvis was about 10 cm. in diameter and there was marked thinning of the parenchyma; the entire mass was filled with thick blood clots. The patient made an uneventful convalescence.

Comment—There was an obstruction at the ureteropelvic juncture which did not permit ureteral backflow. The renal parenchyma was almost completely destroyed, being represented by a thin shell of tissue which was dilated and distended into an almost perfect sphere. The presenting symptom was an extensive hematuria which is quite uncommon in hydronephrosis. Hematuria, together with a large mass in the renal area, suggests

hypernephroma, but kidney tumors practically never occur between the ages of seven and forty. The marked increase in the renal function of the right kidney indicated an extensive hypertrophy of the right kidney, suggesting a long standing destruction of the left kidney, a condition more likely to be associated with hydronephrosis than with malignancy.

CONSERVATIVE TREATMENT OF HYDRONEPHROSIS

In the last decade great strides have been made toward conservative renal surgery. Partial resection of the kidney, plastic operation on the pelvis and ureters, and the resection of obstructing anomalous vessels have made nephrectomy a far less frequent operative procedure. Consequently the present tendency of urologic surgeons is to employ the most conservative methods in the treatment of kidney lesions whenever such measures are compatible with satisfactory results. Barringer⁴ states that there are two main reasons for conservatism in operating for hydronephrosis. First, present day methods of examination are inadequate for determination of precisely what a kidney is doing. Second, it is not known how far a kidney is capable of returning to normal.

Plastic Operation—Quinby⁵ was one of the first to advocate plastic procedures in the treatment of hydronephrosis. He reported a number of cases of hydronephrosis due to constriction of the ureteropelvic juncture by an anomalous artery. He states that ligation and section of the aberrant vessel has been reported to produce cure but was regarded as unsafe from the standpoint of the renal blood supply, especially if the vessel is large. A plastic operation on the ureter and pelvis gives better results. The ureteropelvic juncture may be widened after the manner of a Heineke Mikulicz pyloroplasty or by free section of the ureter with reimplantation into the pelvis at another site avoiding the vessels.

In plastic operations for urinary obstruction the obstruction must be either radically eliminated or circumvented. Von Lichtenberg⁶ who has done much on conservative renal surgery experimental work, states that in disorders such as accessory

arteries and kinks, a plastic operation is not necessary. In other cases the relief of the obstruction is associated either with the transverse or the lateral incision of the ureter. Topographically, three types of obstruction are differentiated depending upon the site of the lesion, those at the ureteropelvic juncture, those along the course of the ureter and those at the opening into the bladder. Von Lichtenberg reported 47 clinical cases of hydronephrosis treated by conservative operation. Secondary nephrectomy was necessary in only 3 cases. Death did not occur in any of the cases.

Maximovitch⁷ reported 112 cases of hydronephrosis and discussed the question of plastic operations. He states that plastic operations necessitate an efficient and careful technic and must be carried out with meticulous care. Sutures and edges of wounds must be carefully handled if successful healing is to be realized. At best, the results of plastic work are problematic even when complications do not occur and the operation has been technically successful. In the experience of Maximovitch's clinic lateral anastomosis has been the least successful as determined by secondary operation or necropsy. Maximovitch believes that sufficient time has not yet been allowed to determine the results which may occur in this field of surgery.

Herbst and Polkey⁸ undertook an investigation on dogs to determine the value of ureteropelvioplasty for the relief of hydronephrosis due to stricture. Failure of the operation was noted in a large percentage of clinical cases. It was also uniformly unsuccessful in their series of sixteen dogs due to mechanical buckling at the site of operation and increased scarring which produced obstruction. They concluded that this was not a satisfactory type of operation for stricture at the ureteropelvic juncture and that better results would be obtained by some form of anastomosis between the pelvis and ureter.

Nephropexy.—This measure is usually utilized in combination with one or more other surgical procedures such as ureteropelvic plastics or a resection of the renal nerves. It removes kinks from the ureter, generally permits dependent drainage of the pelvis and in some cases is essential to the success of the

operation Most surgeons fix the kidney back in its normal position as an adjunct to other plastic or resecting operations

A number of cases of small hydronephroses, usually caused by and associated with ptosis, are completely cured by simple nephropexy The following 2 personal cases are of this type

Case II—A woman aged thirty seven years had been having attacks of pain in the right loin for over a year The pains were very severe at the onset and at times were associated with chills and fever For the last eight months the pain had been almost constant but not so severe Cystoscopy revealed a right hydronephrosis containing 45 cc of urine There was only slight reduction in the function of this kidney The function of the left kidney was normal Pyelograms were taken in both the prone and erect positions in the erect position the kidney was 6 cm lower than in the prone At operation a comparatively normal kidney with a dilated thickened pelvis was found The kidney was fixed to the last rib and to the back muscles The patient had an uneventful convalescence Three years later she reported that she was well and had had no further discomfort or renal pain

Case III—A woman aged thirty eight years complained of right sided pain and moderate dysuria and frequency Cystoscopy revealed a right renal ptosis and a hydronephrosis containing 30 cc of slightly infected urine Pyelograms in the erect and prone position showed a 3 cm excursion of the kidney At operation moderate dilatation of the renal pelvis was found the renal capsule was markedly thickened but was otherwise normal a nephropexy was done She recovered readily from the operation and two years after her operation she had had no further symptoms of kidney trouble

Resection of Nerves—Papin and Ambard,⁹ who first proposed this operation for nephralgia and slight hydronephrosis, state that renal pain is generally a renal pelvic pain and usually due to a distention of the pelvis Papin¹⁰ believes that denervation, or section of the renal nerves, will cure certain hydronephroses In his technic for renal denervation the fat around the kidney is removed, the renal pedicle is exposed and all nerve filaments are severed Nephropexy is then performed Marion believes the denervation may suppress the pain, but will not influence the cause of the disease

BILATERAL HYDRONEPHROSIS

The following case is one in which both kidneys were hydro-nephrotic and partially destroyed Attempts at reducing the

size of the pelvis by means of ureteral manipulation were unsuccessful. Nephrectomy being excluded because of the bilaterality of the lesion, conservative surgical measures were employed with satisfactory results.

Case IV—A man aged thirty eight years, was referred for treatment of hydronephrosis. For ten months he had had severe back pains which recently had become severe and constant. He had lost 55 pounds and tired very readily.

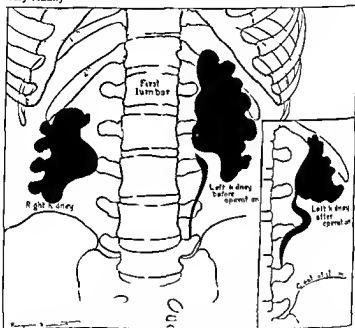


Fig. 409.—Bilateral hydronephrosis with slight ptosis. Insert (same scale as larger picture) shows reduction in size of renal mass after operation. Right and left pyelograms taken at separate times.

On physical examination practically nothing abnormal was found. His urine contained a moderate amount of pus; the two-hour intravenous phthalein return was 10 per cent; blood urea was 70 and the creatinine, 2.9 mg. per 100 cc. of blood.

Cystoscopy and bilateral pelvic lavage were done on several occasions. The residual urine in the right renal pelvis varied from 35 to 90 cc. and the left from 25 to 110 cc. Pyelograms of both kidneys showed markedly

dilated pelvis and clubbing of calices. The upper ureteral segments were slightly dilated and angulated at the ureteropelvic junction. The kidneys were approximately 2 cm. lower when taken in the erect than in the prone position.

Both kidneys were operated upon separately, practically the same condition was found on each side. The left kidney was operated upon first. It was found to be lobulated, soft and dilated, and from one third to one half destroyed. The renal pelvis was dilated, flabby and thickened.

The capsule was cut on the convex surface and stripped back halfway down on each side. The adhesions about the ureteropelvic junction were freed when the kidney was elevated to a normal location, no kink or obstruction could be made out in the upper ureter. A suspension of the kidney was then done. Two months later practically the same operation was done on the right side.

The patient recovered readily from both operations. His urine gradually became more normal, the renal function increased and his general condition became very much better. Cystoscopy was not done until nine months after the operations, at which time the right kidney pelvis contained only 8 cc. and the left 5 cc. of urine. A left pyelogram shows considerable diminution in the size of the renal pelvis together with a reduction in the amount of clubbing of the calices (Fig. 409). He has regained his normal weight, has no pain, is able to lead a very active life and in general feels very well.

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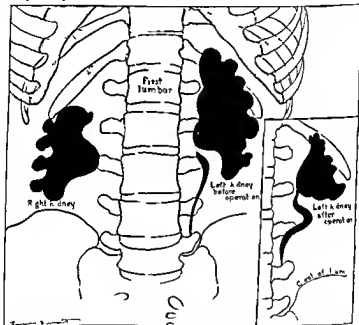


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CLINIC OF DR CHARLES T STURGEON

LOS ANGELES GENERAL HOSPITAL LOS ANGELES CALIFORNIA

CARCINOMA OF THE STOMACH

THE following report is of 2 cases of carcinoma of the stomach both presenting such a difference in symptomatology and duration of the disease that from a diagnostic standpoint they are of interest

Case I—White female age thirty nine years

Chief Complaint—Pain and gas in the upper abdomen

Previous to six months ago this patient enjoyed unusually good health. The present complaint started six months ago. The patient noticed that two or three hours after meals she would develop a pain in the epigastrium which continued until it was relieved by either taking food or soda bicarbonate. She would also occasionally be awakened about midnight with the same pain. The pain was never severe but was always associated with some gas. She never complained of any burning sensation never vomited.

Her appetite was excellent and no particular article of food seemed to cause her any special distress.

There was no loss of weight. Her general strength was excellent and she was able to do all her usual work.

Hemoglobin 70 per cent red blood cells 4,500,000 color index 0.7 white blood cells 8,200 Wassermann negative

Gastric Analysis—Color green blood 0 mucus ++ free HCl 18 degrees total acidity 57 degrees micro 0

Gastrointestinal Series with Barium (Fig 410)—Stomach of average size and orthotonic in type. Marked elongation and broadening of pylorus with definite pattern persistent. There are however a few rugae seen throughout the pylorus. Duodenal bulb of average size and somewhat irregular and retracted upward so that first portion and the junction of the second and third are approximately at the same level. Fluoroscopically the duodenum filled immediately and showed excessive peristalsis but with only slight local tenderness. Small amount of gastroduodenal retention.

Colon by enema somewhat orthotonic and redundant with incompetent ileocecal valve.

Without an x ray study the diagnosis of duodenal ulcer could easily have been made and the patient treated medically until complete obstruction and vomiting occurred—much valuable time would have been lost before any operative work was done

The patient has been observed in the Out patient Department rather frequently and her general condition continues good she has no digestive symptoms has gained in weight and there is a slight improvement in her blood count

Röntgenological examination taken eight months after her operation is as follows (Fig 411)

The distal one third of the stomach is not visualized There is an opening from the body of the stomach directly into the jejunum through which the barium pours rapidly The stomach would appear to be flexible and there



Fig 411—Case I Eight months after operation showing a good functioning gastrectomy

are no filling defects There is no local tenderness present In six hours there is normal progress

The findings are negative for recurrent malignancy

Case II—White male age forty nine years

Chief Complaint—Epigastric pain and vomiting loss of weight weakness

For eight years this patient has had pain referred to the epigastrium coming on two hours after eating The pain at first came on irregularly and was not severe At times it was relieved by food and soda bicarbonate at other times the pain was increased by food For the last three weeks the pain has been more severe and has been continuous and he has vomited after each meal There has been a loss of 40 pounds in weight during the past year The patient feels very weak and is unable to do any work

The findings would be consistent with an early carcinoma of the pylorus.

A diagnosis of carcinoma of the pyloric end of the stomach was made and immediate surgery was advised. The patient's general condition was so good no preliminary treatment was necessary.

The following condition was found:

In the pyloric end of the stomach was a mass about the size of a hen's egg causing almost complete obstruction. There were no palpable glands in the gastrosplenic or gastrophrenic omentum or in the liver.

A gastrectomy was done and the operation completed by means of a posterior Polya.

Pathologic Report—Specimen consists of an approximately rectangular portion of what grossly appears to be stomach 7 x 10 cm. and varying from 6 mm. to 1 cm. in thickness. It presents a large irregular ulceration approxi-



Fig. 410—Case 1. Marked elongation and broadening of pylorus with definite pattern persistent showing an early carcinoma of the pylorus.

imately 3 cm. in diameter with an irregular base whose deepest portions is approximately 1 cm. below level of edges of the ulcer. The edges overhanging are semirigid, very firm.

Diagnosis—Diffuse highly malignant adenocarcinoma of stomach. The patient made a very good postoperative recovery. She did not vomit and

struction from adhesions or other cause just beyond the cap Large six hour gastric retention

Preoperative Diagnosis—1 Chronic gastric ulcer, probably malignant

2 Pyloric obstruction

For four days previous to the operation the patient received gastric lavage twice daily He also received daily 1000 cc of 10 per cent glucose solution intravenously

At operation the following condition was found There was a large epigastric hernia at the site of the previous operative wound The pyloric end of the stomach was adherent to the parietal peritoneum in the hernial sac pulling the pyloric end of the stomach out of the abdomen The pyloric end of the stomach was elongated and contracted The posterior wall of the stomach was densely adherent to the pancreas The gallbladder at first was not visualized but on separating the adhesions in this area it came into view It looked normal The gastrophrenic omentum near the lesser curvature was very dense due to inflammatory infiltration No enlarged lymph glands were seen or palpated The head of the pancreas was hard but not apparently enlarged

The operation consisted of freeing enough of the adhesions to mobilize the stomach and free the gallbladder a resection of the stomach beginning at the duodenum and removing more than half of the stomach The adhesions to the pancreas were freed revealing a large perforated ulcer 2 cm in diameter The area over the pancreas where the ulcer had been adherent was thoroughly cauterized with the actual cautery The operation was completed by means of an anterior Polya The jejunum about 18 inches from the ligament of Treitz was used the bowel turned to the right isoperistaltic so that the stomach emptied along its lesser curvature into the descending loop of the jejunum

This patient for four days had a very stormy convalescence A duodenal tube was inserted through the nose and kept in for four days—the stomach was irrigated every two hours

On the fourth day he was able to retain water On the sixth day he was given 4 ounces of milk and cream every two hours and water in between On the eighth day he was given cereals gelatin and custards At the end of two weeks it was gradually increased so that he was taking soft diet

Pathologic Report—Specimen consists of funnel shaped piece of tissue resembling pyloric portion of stomach 16 cm in length portion of greater diameter measures 9 cm and least diameter 2½ cm Surface is smooth except for a few fibrous tags and some areas are quite hemorrhagic appearing About 2 cm from the extremity of the largest diameter is a circumscribed opening through the entire wall diameter 2 cm The surrounding tissue is indurated but does not extend out far into the wall The pyloric ring is palpable On opening the stomach the wall seems slightly thickened and edematous normal rugations however are present

Diagnosis—Large chronic gastric ulcer with beginning carcinomatous changes

The patient had very bad teeth An x-ray examination revealed ten apical abscesses All were extracted before the patient left the hospital

Seven years ago a diagnosis of gastric ulcer was made and the patient was operated upon. He does not know what was done. There was absolutely no relief of the symptoms following the operation. Six months later the patient was again operated upon for the same condition also without any relief.

Physical Examination—An emaciated adult lying quietly in bed—looks sick and apparently in pain. The examination was negative except for the abdominal which presented a large abdominal hernia in the region of his previous laparotomy scars.

Roentgenogram—185/120



Fig 412—Case II. A large projecting nodule lesser curvature. Considerable depression at the suggestion though not conclusive of malignancy. The stomach is drawn up and suggests Duodenal cap is dilated raising the question of other cause just beyond the cap. Large scar.

← third of the
nodule which
is

Urine—Specific gravity 1.022 acid all urine microscopic few hyaline casts.

Blood—Hemoglobin 65 per cent red blood cells 11,000 polymorphonuclear negative.

Gastric Analysis

Roentgenological—The middle third of the lumen of the nodule which is suspicious. The pyloric region shows no abnormality in this region.

struction from adhesions or other cause just beyond the cap Large six hour gastric retention

Preoperative Diagnosis—1 Chronic gastric ulcer probably malignant

2 Pyloric obstruction

For four days previous to the operation the patient received gastric lavage twice daily He also received daily 1000 cc of 10 per cent glucose solution intravenously

At operation the following condition was found There was a large epigastric hernia at the site of the previous operative wound The pyloric end of the stomach was adherent to the parietal peritoneum in the hernial sac pulling the pyloric end of the stomach out of the abdomen The pyloric end of the stomach was elongated and contracted The posterior wall of the stomach was densely adherent to the pancreas The gallbladder at first was not visualized but on separating the adhesions in this area it came into view It looked normal The gastrohepatic omentum near the lesser curvature was very dense due to inflammatory infiltration No enlarged lymph glands were seen or palpated The head of the pancreas was hard but not apparently enlarged

The operation consisted of freeing enough of the adhesions to mobilize the stomach and free the gallbladder a resection of the stomach beginning at the duodenum and removing more than half of the stomach The adhesions to the pancreas were freed revealing a large perforated ulcer 2 cm in diameter The area over the pancreas where the ulcer had been adherent was thoroughly cauterized with the actual cautery The operation was completed by means of an anterior Polya The jejunum about 18 inches from the ligament of Treitz was used the bowel turned to the right, isoperistaltic so that the stomach emptied along its lesser curvature into the descending loop of the jejunum

This patient for four days had a very stormy convalescence A duodenal tube was inserted through the nose and kept in for four days—the stomach was irrigated every two hours

On the fourth day he was able to retain water On the sixth day he was given 4 ounces of milk and cream every two hours and water in between On the eighth day he was given cereals gelatin and custards At the end of two weeks it was gradually increased so that he was taking soft diet

Pathologic Report—Specimen consists of funnel shaped piece of tissue resembling pyloric portion of stomach 16 cm in length portion of greater diameter measures 9 cm and least diameter 2½ cm Surface is smooth except for a few fibrous tags and some areas are quite hemorrhagic appearing About 2 cm from the extremity of the largest diameter is a circumscribed opening through the entire wall, diameter 2 cm The surrounding tissue is indurated but does not extend out far into the wall The pyloric ring is palpable On opening the stomach the wall seems slightly thickened and edematous normal rugations however are present

Diagnosis—Large chronic gastric ulcer with beginning carcinomatous changes

The patient had very bad teeth An x ray examination revealed ten apical abscesses All were extracted before the patient left the hospital

Resumé—This patient presented a rather typical history of ulcer of the stomach—he had had symptoms for eight years. His general condition was poor due to a marked secondary anemia and loss of weight and also due to the fact that he had been unable to retain any food due to a pyloric obstruction. This obstruction was not due to the carcinomatous ulcer but to pyloric adhesions from the previous surgery. The gastric analysis showed normal acidity. I believe one can state definitely that in this case the ulcer existed



Fig. 413.—Case II. Seven years after operation. Stomach emptied very rapidly, no six hour retention. Findings negative for a recurrent malignancy.

for many years before becoming malignant. It could not have been malignant for a very long time because it is now seven years since his gastric resection and he is still in good health.

Roentgenological Examination—Seven years after operation (Fig. 413)

The stomach emptied very rapidly, no six hour retention. The findings are negative for recurrent malignancy.

Incidence—Carcinoma of the stomach comprises about one third of all instances of carcinoma. Welsh in an analysis of 1300 cases of carcinoma of the stomach found that in 70 per cent of the cases the lesion occurred between the incisura and the pylorus.

nated as a silent area, where the lesion may exist and progress locally for a long time before giving any symptoms. Pain is usually an early symptom, while vomiting and tarry stools are late symptoms.

The duration of symptoms at the time of operation in simple chronic ulcer and carcinoma of the stomach is very well illustrated in the following table by Dr Arthur F Hurst, Guys Hospital.

Duration of symptoms	Simple chronic ulcer	Carcinoma
	146 cases	48 cases
0 to 6 months	4 per cent	48 per cent
6 months to 1 year	11 per cent 7 per cent	75 per cent 27 per cent
1 to 2 years	6 per cent	6 per cent
Over 2 years	83 per cent	19 per cent
Over 5 years	62 per cent	0 per cent

In carcinoma of the stomach gastrectomy is the only operative procedure which offers the patient any chance of a complete recovery. The majority of patients with carcinoma of the stomach are usually poor risks and need some preliminary treatment.

Preoperative Preparation—1 Cases with pyloric obstruction should have gastric lavage for several days before operation. It is often surprising how much improvement takes place from just this procedure.

2 Cases with marked anemia should have a blood transfusion.

3 The chemistry of the blood should be determined on all poor risks, as a great number of these patients have an alkalosis.

4 Several days before operation fluids should be forced.

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CLINIC OF DRS CHARLES T STURGEON AND E RICHMOND WARE

HOSPITAL OF THE GOOD SAMARITAN LOS ANGELES CALIFORNIA

PRIMARY LYMPHOSARCOMA OF THE SPLEEN

Female white married housewife age forty four years

Chief Complaint—General weakness swelling in the left upper abdomen

Onset and Course—In May 1930 the patient began to have vague discomfort in the left upper quadrant of the abdomen accompanied by some pain in the left shoulder and left side of the neck. At this time she complained of tiring more readily than usual. However she stated she had never felt very robust or energetic since she was nineteen or twenty years of age. She noted that her gums bled very easily and that a very slight nudge to her skin was apt to produce a black and blue spot. A few enlarged glands in both axillae and the right groin were also first remarked at this time.

The past personal and family history was of no relative importance. There had been no digestive disturbances no jaundice and no snar condition had ever been discovered in the family. Her weight had been constant.

When the tumor was first felt she consulted a physician who believed the abdominal mass to be an enlarged spleen. One of the axillary glands was removed and the following pathological report was made:

Gland from Axilla—*Tissue Examination*—Moderately enlarged lymph node with medullary portion replaced by fat.

Microscopic Examination—Sections show only benign hyperplasia of lymphoid tissue with multiplication of follicles probably inflammatory. No evidence of any granulomata or malignancy.

From the time of her initial examination in May 1930 until the summer of December 22 1930 there was no change in her condition except for a gradual increase in her weakness pallor and the size of the tumor.

Physical Examination—December 22 1930—General nutrition good but definite pallor of lips skin and mucous membranes. No appearance of jaundice.

The abdomen was slightly distended and contained a large hard mass which filled the left upper quadrant. Its edge was rounded and extended obliquely downward toward the umbilicus where it curved outward. It was not tender and moved with respiration. A distinct notch could be felt in the region of the umbilicus.

There were no other pathological findings in the physical examination.

Pyelogram—This showed the kidneys normal in size but low and slightly rotated upon its long axis.

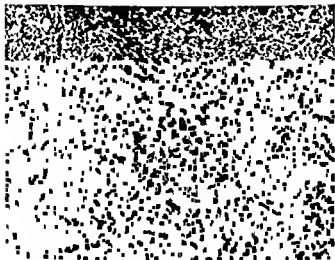


Fig 414 —Magnification—160 diameters

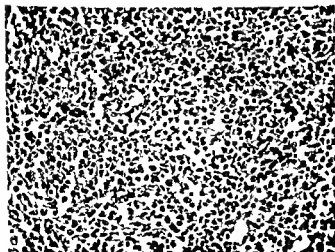


Fig 415 —Magnification—430 diameters

Preoperative Diagnosis.—Banti's disease or splenic anemia in the primary or secondary stage prior to cirrhosis of the liver

Several other conditions were considered and eliminated. Hodgkin's disease had evidently been first suspected, but the biopsy of the axillary gland did not show any of the characteristic changes of this disease. (The slides of this gland have been subsequently reviewed and the original microscopical diagnosis confirmed.) At no time did the white blood picture show anything unusual except for a moderate leukopenia. With normal white cells in a large series of counts, leukemia did not seem possible. Hemolytic anemia was seriously considered, but the fragility of the red cells was normal and there was no increase in the icterus index. The blood had none of the characteristics of pernicious anemia and free hydrochloric acid was found in the stomach contents.

The patient's age, progressive enlargement of the spleen—relatively painless—with an associated anemia of the secondary type, and a moderate leukopenia, all seemed to indicate Banti's disease.

Operation—December 30, 1930.—Pathologic and anatomical findings. The spleen was greatly enlarged. The surface of the spleen was mottled and there were several quite large plaque-like areas under the capsule. The superior surface of the spleen was densely adherent to the diaphragm. There was a small amount of straw-colored fluid in the upper abdomen. Other organs were examined and found to be normal and no enlarged lymph glands were found in the splenic pedicle or elsewhere.

Splenectomy was performed. No great difficulty was encountered in removing the spleen.

Postoperative Course—A blood transfusion was given the day of the operation. The chief complaint for the first few days was pain in the left shoulder and neck which undoubtedly came from injury to the under surface of the diaphragm, produced by freeing adhesions.

Convalescence was rapid and uneventful. The blood count about six weeks after operation still showed a pronounced secondary anemia, and there had been no change in the fragility of the red cells. The patient's weight was unchanged (105½) and she had no serious complaints. She stated that she felt improved by the operation.

On discharge from the hospital an x-ray examination of the chest, left arm and shoulder girdle did not show any evidence of metastasis.

Pathologic Report—December 30, 1930

The spleen is nodular. It measures 19 x 15 x 10 cm. The surface is congested. The capsule is thickened and shows yellowish, fibrous plaques, some of which extend into the substance of the spleen.

The cut surface shows yellowish-gray islands variable in size. In places they suggest interstitial hemorrhage with organization of the clot

ds
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be

cytes or
cellular arrangement is mainly in columns and cords, many of the cells showing

Group 11

Wassermann—Negative 5/31/30

Coagulation Time—15 seconds

6 minutes 15 seconds—slide method

16 minutes—Howell's method

Urine Examinations

2/10/30—Amber clear acid

Specific gravity 1.025

Negative for albumin or sugar

Titratable acids 18 per cent

Few leukocytes occasional squamous epithelial cells one plus mucous threads

1/7/31—Specific gravity 1.013

Faint trace of albumin

Few pus cells

Culture—Sterile

Gastric Analysis

12/23/30	Last night	20 minutes	40 minutes	60 minutes
Total HCl	5°	21°	37°	35°
Free HCl	0°	12°	24°	12°
Occult blood	None	None	None	None

Red Blood Cell Fragility Tests

Date	Intra hemolysis	Complete hemolysis	Conclusion
12/23/30	0.45% NaCl	0.3%	Not abnormally fragile
1/7/31	0.45% NaCl	0.35%	Not abnormally fragile
	Control 0.45%	0.35%	
2/5/31	0.45% NaCl	0.25%	Not abnormally fragile
	Control 0.4%	0.25%	

Discussion—This patient is reported because of the relative rarity of primary lymphosarcoma of the spleen. A rather incomplete survey of the literature reveals only a little over 100 reported cases of primary splenic neoplasms. These are usually classified as (1) spindle-cell sarcoma (2) endothelioma and (3) lymphosarcoma. The most frequent of these is the lymphosarcoma group of which this case is an example.

The condition appears with almost equal frequency in males and females and has a wide age distribution from eleven years to seventy-five years. (One case cited by Helmuth in 1856, occurred in a female infant of eighteen months and was reported, after microscopic examination as a myeloid spindle celled sarcoma.) Smith and Rusk whose exhaustive study gives a

hyperchromatic
tumor cells appear
Sections from
malpighian corpuscle

In places the
ophy of the

Histologically the picture is that of a round cell sarcoma probably lymphosarcoma although so-called endothelial sarcoma of the spleen cannot be excluded

Diagnosis—Lymphosarcoma of the spleen

BLOOD URINE AND GASTRIC CONTENTS REPORTS

Blood Examinations

Date	5/24/30	11/30/30	12/4/30	12/11/30
Hemoglobin	7%	60%	56%	61%
Red blood cells	3,500,000	4,000,000	3,340,000	3,750,000
White blood cells	450	6900	5600	4150
Color index	1.01	0.75	0.85	0.95
Polymorphonuclears	60%	75%	87%	
Small lymphocytes	38%	20%		
Large lymphocytes		4%	4%	
Transferrins		1%	7%	
Variation (size)	None	Slight	Slight	
Variation (shape)	None	Slight	Slight	
Achromia	No	Marked	Slight	

Date	1/16/31	2/3/31	1/21/31	1/21/31	3/3/31
Hemoglobin	55%	44-42%	50%	59%	53%
Red blood cells	3,010,000	3,000,800	3,912,000	4,724,000	3,536,000
White blood cells	550	5600	8300	7600	400
Color index	0.91	0.7	0.64	0.0	0.8
Polymorphonuclears	84%		5%		63.5%
Small lymphocytes	12%		19.5%	19%	26%
Large lymphocytes	4				
Transferrins		Anisocytosis			
		Poikilocytes	3%	2%	5%
Variation (size)	Marked	Macrocytes	Slight	Slight	
Variation (shape)	Marked	Icteric index	Slight	Slight	
Achromia	Marked	8 mg per 100 cc			
		Van den Bergh positive			
		Indirect reaction			

Note

- 1/16/31—Occasional nucleocyte and poikilocytes—moderate degree of polychromatophilia
- 1/21/31—Occasional macrocyte nucleocyte and poikilocytes
- 2/3/31—Slight anisocytosis few poikilocytes slight degree of polychromatophilia

at least exploratory laparotomy is indicated but further procedure is useless in the presence of metastasis or extension of the neoplasm. It should be noted that removal of the spleen is also indicated in Banti's disease a condition which was incorrectly diagnosed in the present patient and which is likely to be confused with sarcoma of the spleen.

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summary of all available cases up to 1923 point out that 13 per cent of the reported patients had a history of previous malarial infection. This appears to be the only point of interest in the past history. The incidence of tuberculosis and syphilis is no more than might be expected in any other group of like numbers.

The only consistent complaint and physical sign is a swelling of the spleen which is usually large enough to be discovered by the patient. In the 104 cases reported by Smith and Rusk there were only 6 who did not have a tumor which was readily palpable. Pain in the left hypochondrium with frequent radiation to the back and left shoulder was a common complaint. This pain was frequently accompanied by tenderness over the enlarged spleen. Cachexia was often present but generally after metastatic growth had developed. No characteristic blood changes appear to accompany this condition except those of a secondary anemia often similar to the usual blood picture of Banti's disease. The red cells do not show any increased fragility. Very few platelet counts could be found in the case reports. Pleural effusion of the left chest sometimes bloody is frequently present even in the absence of pulmonary or pleural metastases. Ascites is a common finding and was noted in a fifth of the cited cases.

The mortality reported by Smith and Rusk indicated an operative death rate of 17.9 per cent in 39 splenectomies or partial splenectomies. This figure represents immediate deaths on the table or occurring within a few hours and frequently due to hemorrhage. Thirty-four and three tenths per cent of the splenectomy cases showed subsequent metastases, recurrences or extensions of the growth over a period varying from five weeks to nine years. Sixty-five and seven tenths were well at the time reported. This series represents a group of patients extending over a long period of years and some of the operations were done many years ago. With improved modern technic the operative mortality is undoubtedly much lower at the present time.

As splenectomy is the only procedure which will save the lives of these individuals we feel that it should be attempted when any suspicion of malignant tumor of the spleen exists.

CLINIC OF DRS GEORGE W SWIFT AND PAUL G FLOTHOW

NEUROSURGICAL CLINIC SEATTLE WASHINGTON

HEAD INJURIES

THE subject of this clinic Head Injuries is most timely. Accidents due to modern transportation and especially those occurring in our leading industry in the Northwest lumber manufacture are increasingly associated with head injuries.

In recent years research workers in studying the various problems associated with intracranial lesions have established certain definite facts regarding the three factors involved in any cerebral trauma—shock hemorrhage and edema. Fatalities in the past have been largely due to these three factors and the control of each must be the aim of the surgeon if he is to decrease the mortality. Mortality however is not the only important consideration. The development of a traumatic neurosis is an economic tragedy. Unfortunately one must consider this aspect. A cripple or an invalid unable to provide for himself or his family becomes eventually a charge upon society at large. If we can prevent such economic tragedies as well as decrease the actual mortality in industrial and civil accidents involving the head we have accomplished a great deal. It is with this in view that I presume to present this rather timeworn subject at a clinic.

Here is a young man in his late teens who while riding a motorcycle collided with a street car. The result was a severe compound skull fracture with intracranial hemorrhage laceration of the scalp dura and cerebral cortex. His left forehead was crushed inward to such a degree that the contents of the cranial cavity were forced outward the resulting laceration of

nails and toes. His eyes protruded somewhat, his chest was clear, his abdomen soft, the bladder distended. He moved his arms and legs easily, there was no paralysis. Further examination was considered unnecessary at the time.

The vagus control of the heart may be disturbed in severe concussion. Pressure on the central nuclei will cause an irritation which is manifested by a slow pulse. Concussion with small hemorrhages may cause loss of action by the vagus with a resulting rapid thready pulse. The unopposed action of the sympathetic or stimulation of the sympathetic causes a dilatation of the capillary network of the entire body. What effect does this have and how may we detect such a change? First of all the opening of the capillary network immediately releases the normal tension of the blood vessels—a soft thready pulse ensues as the blood plasma escapes into the tissues. This measured by the sphygmomanometer reveals itself in a lowered diastolic blood pressure. Therefore, the first clue to disturbance of vagus and sympathetic control is shown in a thready pulse or lowered diastolic blood pressure.

With the dilated capillary network come two changes: first the escape of water, through skin elimination, with a consequent lowering of the body temperature, and second lack of oxygen to the body cells. The bluish tint of the finger tips and lips is an outward manifestation, but the same capillary dilatation obtains in the internal organs: the brain, liver, and kidneys.

While this is occurring let us consider what happens to the water of the body. The greater proportion of body water, as shown by Gamble, is held within the cells, the intracellular content composing about 80 per cent of the total. The remainder, 20 per cent of the total, is about equally divided between the vascular (within the blood vessels as blood plasma) and the interstitial (mostly the cerebrospinal fluid). There is a simple and easy interchange between the vascular and interstitial volumes. The latter acts as a reservoir for the vascular structures. The chemical constituents are identical. The vascular content changes according to Rowntree at the rate of 8 liters daily, in what is termed the fourth or gastro-intestinal circulation.

all tissues and rupture of vessels was inevitable. As a result of this sudden severe injury to the cerebral hemispheres the patient was rendered unconscious. He bled profusely before aid could be given. The accident occurred on April 24, 1930 and the patient was taken to Columbus Hospital, put to bed, a cursory examination made, dressings applied to the lacerated area of the scalp and heat applied to the body. Atropine was given subcutaneously and 50 cc. of 50 per cent glucose given intravenously. The nurse was instructed to record the pulse, respiration and temperature at frequent intervals and to note any blood in the catheterized specimen of urine or in the vomitus and to record the blood pressure every thirty minutes. This is our routine treatment of cerebrocranial injuries. Let us consider just what each procedure means and why it is done. One might easily inquire why not take an x-ray at once to see about the fracture? Why not operate upon the compound fracture and ligate bleeding vessels? Why not wash out the stomach? Why not give intravenous saline, morphine, coffee per rectum, caffeine, adrenalin and the many other things formerly done? The answer to all of these questions will be found as we proceed.

Shock—Where the cerebral mechanism is suddenly subjected to violence its normal function is disturbed and consciousness is markedly impaired or lost depending upon the degree of violence. When this occurs the body is governed by the action of the centers for respiration, cardiac action, temperature, vasomotor control, especially of the capillaries in the organs, tissues and skin, the glandular reactions and the volume of the blood plasma. The immediate control of these functions is fortunately vested in a few key structures, namely, the vagus nerves, the sympathetic nervous system and water metabolism. Since blood pressure gives us a clue to both the volume of blood plasma and the reaction of the cardiac mechanism, it is essential that a careful record be kept of this important barometer. The vagus and sympathetic nervous system action will be discussed later.

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Blood plasma leaves the vessels in the mucosa of the stomach and upper duodenum as gastric juice succus entericus and mixes with the food. It is reabsorbed in the lower small intestine. When the sympathetic control of this circulation is disturbed in severe cerebrocranial injuries vomiting undoubtedly is one of the results. Therefore while vomiting may be the result of intracranial pressure upon the floor of the ventricle it may also be brought about by increased gastric secretion hence it is an important symptom in these cases. *Pernicious vomiting* must be controlled because as shown by Gamble and his co-workers Fay Rowntree and others it so depletes the blood plasma that death may result.

To combat shock therefore one must first restore the blood plasma volume and the control of the vagus and sympathetic and institute measures to prevent its recurrence. This is accomplished first by preventing the loss of blood plasma via the skin and capillary extravasation into the tissues. Atropine 1/100 grain repeated at intervals of thirty minutes for four doses will usually give prompt response. Heat applied to the body or even intracolonic hot coffee or salt solution may be necessary. Next it is essential that the blood plasma be brought back to the vessels or to draw upon the reservoirs of interstitial fluids in order to raise the diastolic pressure. Raising the diastolic pressure brings back oxygen to the brain. Cobb and Lennox have shown the great importance of this factor in cerebral metabolism. We can easily accomplish this by giving intravenous injections of 50 cc. of 50 per cent glucose solution. Ampules of this solution may be kept ready for instant use. What does glucose do that salt solution cannot do? In the first place glucose in hypertonic solution has been shown by Peet Weed Fay and others to be a most powerful agent for withdrawal of fluid from the interstitial spaces into the vascular structures. It is easily oxidized and leaves the chemical content of the blood plasma unchanged. Furthermore it yields carbon dioxide which assists in stimulating the respiratory center thus enabling the cells to obtain a greater oxygen supply. This then is the ideal agent. Normal salt solution on the other hand in

creases the water volume temporarily only to cause a greater edema of the interstitial spaces because of its permeability of the membranes. In cases of pernicious vomiting however it is essential that the blood plasma volume be kept up by moderate amounts of normal salt solution.

The prevention of a recurrence of shock is essential. Glucose injections are repeated, atropine, ergot, pituitrin, salt solution, even blood transfusion may be indicated. The blood pressure will be the best barometer at this stage. Atropine stimulates the vagus both directly and indirectly. There is little use in whipping up the heart if the outflow of plasma is open. Therefore all measures in the stage of shock are directed toward closure of the capillary network.

Second Stage—The management of the second stage now becomes of great moment. With the return of consciousness we have also the development of other conditions with which we must contend.

Intracranial hemorrhage in the presence of a simple fracture usually is easily diagnosed but in cases of compound fracture we may overlook serious intracranial hemorrhage either subdural or subcortical. A widening of the systolic and diastolic blood pressure is of importance at this point. It is our custom however to do a spinal puncture soon after the period of acute shock has passed. Free blood in the subarachnoid spaces and cistern must be removed by frequent drainage. This frequent spinal drainage is extremely important since one has only ten days within which to clear the subarachnoid spaces. Later lysis has occurred and further drainage is useless. Spinal puncture done in the recumbent position is safe if one uses a small caliber needle and measures the pressure. In pressures higher than 30 mm Hg one should suspect hemorrhage. Restlessness may be due to a full bladder or to cerebral irritation and catheterization may be necessary. Chloral hydrate is a good drug to control excessive restlessness. Morphine may be used but one must be on the alert for hemorrhage and its signs. Morphine has a tendency to mask the respiratory symptoms. When edema the third factor begins to manifest itself one must begin dehy-

dration Dehydrate but do not operate except in severe cases where an exploration may reveal a hemorrhage Simple edema yields promptly to dehydration Fluid is constantly withdrawn from the interstitial reservoirs (the greatest of which is the cerebroventricular system) when the bowels are kept free with the use of magnesium sulphate One can augment this outward flow by giving glucose 10 per cent solution either by rectum or intravenously Spinal drainage is also useful for this purpose

When should one make the neurological and x ray examinations? Immediately after the period of shock has passed and before the period of edema has begun This is usually about the sixth to the twelfth hour When should one repair the injured brain skull and scalp? There is no immediate hurry When exploration for hemorrhage is necessary either turn down a large flap or use a wide trephine (Fig 416) One should not split the temporal muscle but reflect it Explore and then replace the bone and flap The middle meningeal is the most common vessel to be ruptured so the site usually chosen is over the region of this vessel In this particular case the injury was well forward but the bleeding came from the anterior branch of the middle meningeal

The Final Stage —*Convalescence* —Equally important is the control of the final stage of convalescence When the patient has passed through shock secondary edema possibly the removal of a large blood clot and begins to inquire about his accident serious after effects may be induced from the mental side A severe head injury carries with it a certain amount of unusual interest on the part of friends and relatives These outsiders begin very early in the history of the case to interfere with the management They seem to think operations are essential that x rays must be taken at once That the patient has had a most narrow escape is always uppermost in their minds Questions are constantly asked of the nurses and internes regarding each step during the entire period of hospitalization To permit too frequent visits on their part not only weakens the patient but later may be the subject of a prolonged discussion with the family and patient It is our custom to have a well trained nurse

who will impart only such information as she is told to give to permit no visitors until the final stage, and then to treat even severe cases very lightly. We find that in this manner the end result from a mental standpoint is much better.

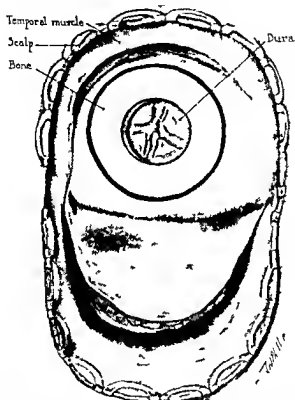


Fig 416 —A flap has been turned down over the temporal region exposing the skull. A trephine opening has been made with a Jentzer trephine, dura opened, clot removed, dural flaps replaced, and button of bone replaced.

This patient was first taken to the City Hospital after his injury and the next day he was removed to the Columbus Hospital. He was injured on April 24, 1930, about 4:30 in the afternoon. The symptoms of shock disappeared by midnight. The following day his pulse began to drop and at 2:34 in the

afternoon was recorded by the nurse as 64. The patient became restless and as the second stage developed the temperature began to go up, reaching $99\frac{1}{4}^{\circ}\text{F}$ at 8 00 o'clock in the evening, and his pulse was 74. By midnight the temperature had dropped to $98\frac{1}{4}$, the pulse to 64. By 8 00 o'clock in the morning the pulse was 60, the patient was quite restless.

Stereoroentgenograms were taken with the left side down, and a compound comminuted fracture was found extending from the frontal bone on the left side backward and upward to the junction of the parietal with the occipital bone. The zygoma on

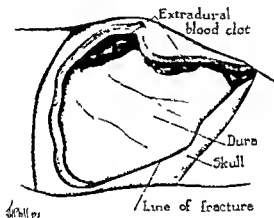


Fig. 417—The depressed fracture has been elevated. Remnants of blood clot show separating the dura from the bone. The dural defect is anterior to the margin and has not yet been uncovered.

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and is now able to watch the telephone in the messenger office in which he works

This case illustrates the cardinal points in severe cerebral cranial injuries

- 1 Treatment for shock
- 2 A careful neurological and roentgenological examination
- 3 Watch for the second stage symptoms of secondary edema or hemorrhage
- 4 Convalescence

afternoon was recorded by the nurse as 64. The patient became restless and as the second stage developed the temperature began to go up, reaching 99.4 F at 8 00 o'clock in the evening, and his pulse was 74. By midnight the temperature had dropped to 98.4, the pulse to 64. By 8 00 o'clock in the morning the pulse was 60, the patient was quite restless.

Stereoroentgenograms were taken with the left side down, and a compound comminuted fracture was found extending from the frontal bone on the left side backward and upward to the junction of the parietal with the occipital bone. The zygoma on

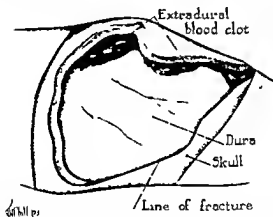


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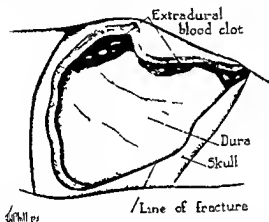


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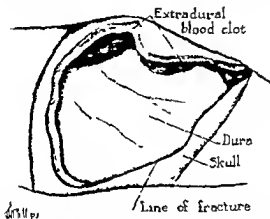


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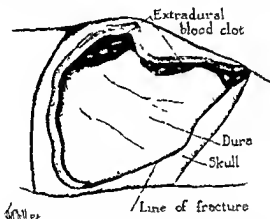


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PAIN OF SYMPATHETIC ORIGIN

THE case we are presenting this morning is interesting because it brings out several of the important features of the new work dealing with the sympathetic nervous system.

This young lady is nineteen years old. She was referred to us by Dr H. J. Wyckoff with the following history: April 5, 1929, her right hand was injured in a pump handle. She sustained a laceration of the first metacarpal bone. This healed up quite well but she still continued to have this pain in the region of the scar and up the forearm. Various diagnoses were made and various treatments instituted without avail. A diagnosis of peripheral neuritis was made. X-ray examination at that time showed what appeared to be an exostosis on the metacarpal bone which made blurring of the surrounding tissues. An exploratory operation was done and the bone scraped. The tissues healed well but there was no relief of pain. She developed quite a large scar almost a keloid formation which was very red and quite painful to touch. The pain at first was localized to the hand but after awhile it spread above the wrist and extended up to the elbow.

She was referred to us on September 23, 1930, by Dr. Wyckoff who felt that there were sympathetic elements concerned in this pain. She stated that since the injury she had had intense pain in her hand and arm which seemed to vary considerably with weather conditions and was apt to be more painful in cold weather. There were two types of pain present: one of them a constant ache, the other an acute shooting type of pain which she likened to a severe toothache.

Examination showed a scar nearly the diameter of the right hand approximately 2½ inches long with keloid formation. This scar was very red and quite painful to touch especially in the distal portion. The right hand was markedly colder than the left and there was excessive cold perspiration present.

In view of the history of an injury followed by an increasing pain and the fact that this pain was apt to be more intense when the hand was cold and was associated with excessive perspiration and diminution of temperature, it was felt that there was probably a considerable vasomotor element present in this case. The following note was made on the history at this time:

The question of whether or not this is a true sympathetic pain should be determined before any surgery is advised. I feel that this is a sympathetic pain and that the upper dorsal sympathetic ganglia be injected with novocaine. If this gives relief of pain operation is indicated.

During this entire time there has been no recurrence of pain the right hand has stayed warm and dry the scar has become considerably less red and is not tender as it was previously The veins of the right hand have remained prominent

You will note that we have avoided the Horner's syndrome The Horner's syndrome was present for only a few days following the operation and then disappeared We feel that this is due to the fact that the inferior cervical ganglion was left intact It is possible that we removed the second and third dorsal ganglia rather than the first and second We have done the same thing in a number of cases and in each instance have avoided the development of the Horner's syndrome In our recent cases we are removing the second and third ganglia rather than the first and second since it has been shown that vascular impulses to the upper extremity arise not higher than the third dorsal segment

We do not feel that it is necessary to produce a Horner's syndrome In cases of this kind where only one side is to be operated upon it is quite a cosmetic catastrophe to cause a unilateral syndrome Where the operation is performed for conditions having to do with the sympathetic supply of the arm it is not necessary to produce a Horner's syndrome as all of the sympathetic channels may be interrupted by the removal of the second and third dorsal ganglia In dealing with the conditions of the face and head one must of course remove the inferior cervical and the first and second dorsal ganglia in order to be absolutely sure of getting all of the sympathetic innervation In these cases the production of the Horner's syndrome is unavoidable

This case illustrates quite well the modern tendency in dealing with the sympathetic nervous system Until recently most procedures having to do with the sympathetic nervous system were largely in the nature of hit or miss affairs One would see a case and would feel that it might be a sympathetic affair Operation was performed on the possibility, without any knowledge beforehand as to whether or not one could expect a favorable result

On September 24, 1930, novocaine injection of the right dorsal sympathetic trunk was done. A needle was inserted at the level of the seventh cervical spine 4 cm. from the midline. the first rib was encountered and then the needle was angled inward at an angle of approximately 30 degrees and downward at a lesser angle until the body of the vertebra was reached. The direction of the needle was then slightly changed and inserted to a level approximately 2 cm. anterior to the transverse process. Fifteen cc. of 2 per cent novocaine were then injected. Within ten minutes there was a marked difference in the appearance of the two hands, the right hand became distinctly warmer and there was absence of perspiration. There was also an engorgement of the veins of the hands. Within twenty minutes a complete Horner's syndrome appeared. There was a definite enophthalmos and contraction of the pupil of the eye with lack of perspiration over the entire right side of the face, neck and arm. Within ten minutes after the injection the patient stated that the pain in the hand was diminishing and ten minutes later the pain had entirely disappeared.

The injection was performed in a warm operating room; the patient was perspiring quite freely and the marked lack of perspiration of the right side of her face and arm in contrast to the excessive perspiration of the uninjected side was quite startling. The Horner's syndrome and the relief of pain persisted during the period of sympathetic anesthesia. At the height of the reaction sensory examination was made and it was found that the somatic nerves were entirely intact. So that in this case we were able to anesthetize only the sympathetics leaving the somatics intact. The relief of pain under these conditions proved that it was entirely sympathetic in origin. Approximately one and a half hours later the effects of the novocaine began to wear off, the pain gradually returned and within three hours the Horner's syndrome had entirely disappeared and the right hand was again cold, painful and moist.

On October 1, 1930 at the Virginia Mason Hospital dorsal sympathetic ganglionectomy was done. A midline incision was made from the seventh cervical spine to the third dorsal spine. The muscles and fascia were separated one finger's breadth to the right of the spinous processes. This separation was carried down to the ribs. The second rib was identified and cleared together with its transverse process. About 1½ inches of the rib and the transverse process were removed. The pleura was uninjured in this procedure. The sympathetic trunk and the first and second dorsal sympathetic ganglia

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With the introduction of injection methods of the sympathetic trunk all of this hit or miss procedure has been eliminated. We are now able to determine exactly without error before the operation whether or not we can expect a successful result. The sympathetic trunk may be injected at any portion with novocaine and in this way we are able to prognosticate no matter where the operation is to be performed, just exactly what the results will be. At this time, of course, the major indications for sympathetic surgery are in diseases having to do with the vascular mechanism of the extremities. These sympathetics are particularly easy to inject.

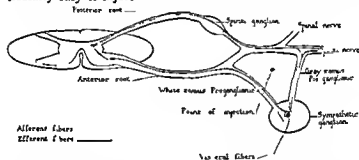


Fig. 418.—Diagram showing the possible pathways of afferent pain fibers of sympathetic origin and the point of election for diagnostic and therapeutic injection of sympathetics.

For most conditions having to do with vascular diseases it is only necessary to do a paravertebral block of the nerve supply involved. In cases where we are dealing with pain, however it

ably have been enough anesthesia of the somatic nerves to have obscured the picture. In such a case it is necessary, therefore, to inject only the sympathetics. Where we are dealing with

to do a deeper injection

It is our feeling that this case and similar cases which we have observed offer quite definite evidence that the sympathetics do carry afferent painful impulses to the central nervous system. It has been held that the painful condition is due to vasospasm and that the pain itself is not carried over sympathetic trunks. If this is true rhizotomy of the trunks involved should relieve the pain but we know by sad experience that it does not. It is our feeling that the sympathetics do carry afferent pain fibers and that the relief of pain in conditions of this type is due not only to the vasodilating effect of the interruption of the sympathetic impulses but also to the actual interruption of pain tracts which are carried in the sympathetic trunks.

Recently a number of men have been treating various vascular conditions referable to the sympathetic nervous system and conditions such as angina pectoris by the injection of alcohol into the sympathetic nerves. It is our feeling that as time goes on and as we have more experience with the injection of alcohol a great many of our operative procedures on the sympathetic nervous system will be replaced by injections of alcohol. We do not feel that surgery will be entirely done away with for various reasons. First of all in the surgical procedures one knows exactly what one is doing exactly which sympathetic trunks and ganglia are being interrupted. It is possible to localize our operative procedure exactly to the portions of the sympathetic trunk which we wish to remove. This is not true of alcohol injection. One does not know how far the alcohol is going to extend.

Theoretically the sympathetics should not regenerate following their destruction by alcohol but actually we believe they do. We have observed cases in whom there has been recurrence of vasomotor control following alcohol injection.

Furthermore in the dorsal portions of the sympathetics the injections must be made perilously close to the pleura. This probably does no damage but it must be considered. Another consideration is the possibility of injecting the alcohol into the spinal canal by way of a prolongation of the dura. We recently had a case in which upon severing the first dorsal ganglion we

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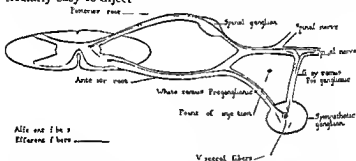


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For most conditions having to do with vascular diseases it is only necessary to do a paravertebral block of the nerve supply involved. In cases where we are dealing with pain, however it is necessary to go deeper and to pick out the sympathetic trunks and leave the somatic trunks intact. In this case for instance, if a simple paravertebral block had been done there would probably have been enough anesthesia of the somatic nerves to have obscured the picture. In such a case it is necessary therefore, to inject only the sympathetics. Where we are dealing with

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CLINIC OF DR W A TAYLOR

TAYLOR-RICHARDSON-HICKS CLINIC, ELLENSBURG WASHINGTON

RUPTURED DUODENAL ULCER. REPORT OF TWELVE OPERATIVE CASES

WE intend to discuss this morning the most serious complication of duodenal ulcer, namely acute perforation. However a few general remarks pertaining to duodenal ulcer may not be out of place.

Peptic ulcer is either gastric or duodenal and it is extremely important that a distinction be made between these two conditions.

Incidence—Hurst found approximately 200 cases of duodenal ulcer in 4000 consecutive autopsies at the Leeds General Infirmary, and about 80 per cent of these were chronic ulcers. Many of these cases gave no symptoms during life.

Etiology—*Age*—Both acute and chronic duodenal ulcers are rare before puberty.

Sex—This condition is about three and one half times as common in males as in females but the incidence among women seems to be increasing. All the cases of ruptured duodenal ulcers which came under our observation occurred in males.

Occupation—Duodenal ulcers have been found in a noticeable percentage of British soldiers who saw service in the World War. The incidence among the medical profession appears to be particularly high.

Vitamin Deficiency—Some authorities believe that ulcer is due to a dietary vitamin deficiency and that the success of modern medical treatment depends upon the correction of this deficiency.

Ulcer Diathesis—There is a general diathesis which renders an individual especially liable to the development of a chronic

obtained spinal fluid in the wound due to a prolongation of the dura which was severed at the same time

Cases have been reported of total paralysis following alcohol injection. This is no doubt due to the intraspinal injection by way of one of these prolongations of the dura. However, if one is very careful in the technic of injection this complication should be avoided.

The important point which we wish to emphasize in the presentation of this case is that in the diagnostic injection methods we have a diagnostic procedure added to our armamentarium which indicates to us definitely before any operative procedure is advised just exactly what one can expect as result of the operation. This diagnostic method has completely done away with the hit or miss type of the sympathetic surgery which has been so prevalent heretofore and still is prevalent. It is no longer necessary to do experimental sympathetic surgery.

fects teeth or tonsils as well as from an appendicitis a cholecystitis or an infected sinus or prostate

Other predisposing causes are chronic duodenal ileus mental and physical fatigue and indiscretions in diet

Pathology —Ulcers occur most frequently in the duodenal bulb and are rarely found in the second or third portions of the duodenum as the food is shot onward with great rapidity

The submucous plexus of arteries in the duodenal bulb is composed of a few vessels which are small and do not anastomose freely The circulation is slow and the lumen of the vessels is small so that infective emboli can easily lodge in them and thrombosis can occur more readily than elsewhere The action of the hydrochloric acid and other irritants on the devitalized tissue produces an area of necrosis called an erosion The pepsin which has been activated by the hydrochloric acid, digests the necrotic tissue and produces the typical ulcer

Varieties —Duodenal ulcers are classified according to their depth as acute, subacute, and chronic

Acute ulcers are usually multiple and are limited to the mucosa and submucosa They are irregularly distributed and may be found in the second and third portions of the duodenum They usually heal rapidly but may become chronic Death may be caused by hemorrhage, or rarely by perforation Acute duodenal ulcers may coexist with acute ulcers of the stomach Except for hemorrhage and perforation, they are usually free from symptoms

Curling's ulcer is an acute ulcer of the duodenum, complicating a severe burn It is found exclusively in children and is believed to be caused by the toxemia from the burn These ulcers are usually located in the first portion of the duodenum and the symptoms are so vague that they are seldom recognized during life Death is due to perforation or hemorrhage

Subacute ulcers usually reach the muscularis and may even invade it This variety is extremely difficult to distinguish clinically

Chronic ulcers penetrate the muscularis They not infrequently occur in pairs The two ulcers may coalesce and en

ulcer These individuals show special facial characteristics and have a low alkalinity of the blood and tissues There is frequently a vasoneurotic diathesis which produces spasm and atony in the arterioles and venules of the mucous membrane of the ulcerative area

Hypersplenic Gastric Diathesis—This is a special diathesis which determines whether the ulcer develops in the stomach or in the duodenum It is characterized by hyperchlorhydria and a short stomach with active peristalsis and rapid evacuation This condition is found in a large proportion of healthy men and is compatible with perfect digestion but is the essential predisposing factor in the production of a duodenal ulcer Several members of the same family may be affected Hurst believes that a duodenal ulcer cannot develop in an individual who does not have this diathesis and suggests the term 'duodenal diathesis'

Hyperacidity—While the presence of hydrochloric acid in the gastric juice is an essential factor in the development of a duodenal ulcer, it is not the only essential factor Quite frequently it is one of the factors that cause an acute ulcer to become chronic

Bacteriology—Rosenow has isolated streptococci from the deep tissues of ulcers and has been able by intravenous inoculation of their cultures to produce ulcers in a large proportion of animals The same results have also been obtained from dead bacteria and filtrates of active cultures showing that bacterial toxins are also effective He has also been able to produce gastric and duodenal ulcers in animals by inoculating them with streptococci which have been isolated from the infected teeth and infected tonsils of patients affected with gastric or duodenal ulcers

Infection appears to play the predominant role in the attacks No signs of infection are found if the ulcer is excised during a quiescent period but if excised during an attack when pain rigidity, and tenderness are present and especially if hemorrhage has occurred recently signs of infection will be found The infection is carried by the blood stream and may arise from in

supplying the duodenum but it may also be caused by reflex action of the vagus which can in turn be caused by peritoneal irritation anywhere in the abdominal cavity. This is usually produced by adhesions of the duodenum gallbladder appendix or colon. A reflex spasm of the pylorus is thus produced. The pain may vary from a simple sense of discomfort and fulness to an acute and agonizing pain. The clocklike regularity is a striking feature. Sometimes there is a definitely located spot of pain about half way between the navel and the ensiform cartilage and a little to the right of the midline. There is usually some tenderness and rigidity.

Hemorrhage—While not as common as in gastric ulcer hemorrhage may be both the first and the predominating symptom. There may be only a slight vomiting of blood followed by tarry stools or the hemorrhage may be so extensive that the patient will faint. The first hemorrhage is seldom fatal but an operation should follow the recovery from the first one as a second one may cause death. It must be remembered that the vomiting of blood may also occur in such conditions as varicose veins of the esophagus hepatitis cirrhosis of the liver enlargement of the spleen benign intragastric tumors and minute erosions of the gastric mucosa. The presence of tarry stools is always a suggestive symptom.

In some cases there are no definite gastric symptoms. These cases are usually characterized by a discomfort in the lower abdomen an occasional attack of diarrhea anorexia and loss of weight.

Pylorospasm is a reflex spasm of the pyloric sphincter occurring during the later stages of digestion and is due to the irritation of the ulcer by the very acid chyme. The evacuation of the stomach normally begins while a meal is actually taken but in the presence of pylorospasm it becomes abnormally slow during the later stages of digestion and one eighth or more of the contrast meal will frequently be found remaining in the stomach six hours after ingestion.

There is a *hyperperistalsis* of both the stomach and intestine and the advanced portion of the contrast meal may be found to

circle the duodenal bulb the contraction of the scar causing the stenosis and retention of the gastric contents so frequently seen in the chronic cases. Anterior ulcers show a greater tendency to heal but a greater tendency to perforate acutely than those on the posterior wall. Those on the posterior wall have more of a tendency to severe hemorrhage than those of the anterior wall. When hemorrhage occurs ulcer of the posterior wall should always be considered. These ulcers are extremely chronic and may become adherent to the pancreas liver gallbladder or colon.

Perforation—Practically 20 per cent of ulcers perforate. Perforation may be acute subacute or chronic. In acute perforation there is a sudden rupture of the base of the ulcer and the contents escape into the general peritoneal cavity and a peritonitis results. Acute perforation may be found either in acute or chronic ulcers. When the perforation is small and occurs after adhesions have formed around the ulcer base or if the opening is quickly closed by a plug of omentum or lymph it is subacute. In chronic perforation the adhesions between the ulcer and some neighboring viscus is so firm that the ulcer base is no longer formed by the duodenum but by the viscus to which it adheres.

Malignant degeneration of a duodenal ulcer is so rare that many authorities say that it never occurs. Kettle however has recently reported a true example of duodenal ulcer cancer. He is of the opinion that there is nothing inherent in the duodenal ulcer which predisposes to malignancy.

Symptoms—Many duodenal ulcers are only discovered at autopsy and frequently either hemorrhage or perforation is the first symptom. This is not the rule as 90 per cent of cases will have a previous ulcer history.

Pain is the most frequent complaint. It occurs from two to three hours after meals frequently lasts until the next meal and is relieved by the ingestion of food or alkali. The attacks of pain may last for a few weeks or for several months and are frequently followed by long periods of comparative comfort. The pain is usually due to the involvement of the sensory nerves

supplying the duodenum but it may also be caused by reflex action of the vagus which can in turn, be caused by peritoneal irritation anywhere in the abdominal cavity. This is usually produced by adhesions of the duodenum gallbladder appendix or colon. A reflex spasm of the pylorus is thus produced. The pain may vary from a simple sense of discomfort and fulness to an acute and agonizing pain. The clocklike regularity is a striking feature. Sometimes there is a definitely located spot of pain about half way between the navel and the ensiform cartilage and a little to the right of the midline. There is usually some tenderness and rigidity.

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Malignant degeneration of a duodenal ulcer is so rare that many authorities say that it never occurs. Kettle however has recently reported a true example of duodenal ulcer cancer. He is of the opinion that there is nothing inherent in the duodenal ulcer which predisposes to malignancy.

Symptoms—Many duodenal ulcers are only discovered at autopsy and frequently either hemorrhage or perforation is the first symptom. This is not the rule as 90 per cent of cases will have a previous ulcer history.

Pain is the most frequent complaint. It occurs from two to three hours after meals frequently lasts until the next meal and is relieved by the ingestion of food or alkali. The attacks of pain may last for a few weeks or for several months and are frequently followed by long periods of comparative comfort. The pain is usually due to the involvement of the sensory nerves

supplying the duodenum but it may also be caused by reflex action of the vagus which can in turn be caused by peritoneal irritation anywhere in the abdominal cavity. This is usually produced by adhesions of the duodenum gallbladder appendix or colon. A reflex spasm of the pylorus is thus produced. The pain may vary from a simple sense of discomfort and fulness to an acute and agonizing pain. The clocklike regularity is a striking feature. Sometimes there is a definitely located spot of pain about half way between the navel and the ensiform cartilage and a little to the right of the midline. There is usually some tenderness and rigidity.

Hemorrhage—While not as common as in gastric ulcer hemorrhage may be both the first and the predominating symptom. There may be only a slight vomiting of blood followed by tarry stools or the hemorrhage may be so extensive that the patient will faint. The first hemorrhage is seldom fatal but an operation should follow the recovery from the first one as a second one may cause death. It must be remembered that the vomiting of blood may also occur in such conditions as varicose veins of the esophagus hepatitis cirrhosis of the liver enlargement of the spleen benign intragastric tumors and minute erosions of the gastric mucosa. The presence of tarry stools is always a suggestive symptom.

In some cases there are no definite gastric symptoms. These cases are usually characterized by a discomfort in the lower abdomen an occasional attack of diarrhea anorexia and loss of weight.

Pylorospasm is a reflex spasm of the pyloric sphincter occurring during the later stages of digestion and is due to the irritation of the ulcer by the very acid chyme. The evacuation of the stomach normally begins while a meal is actually taken but in the presence of pylorospasm it becomes abnormally slow during the later stages of digestion and one eighth or more of the contrast meal will frequently be found remaining in the stomach six hours after ingestion.

There is a *hyperperistalsis* of both the stomach and intestine and the advanced portion of the contrast meal may be found to

have advanced as far as the splenic flexure of the colon while an appreciable residue still remains in the stomach

Organic pyloric stenosis usually occurs when the surrounding inflammatory scar tissue contracts decreasing the lumen of the pyloric canal. Atony and dilation of the stomach eventually supervene

Hyperchlorhydria with a high curve is found in over 90 per cent of all cases of duodenal ulcer. It is most marked during the later stages of digestion the initial part of the curve remains unaltered. The curve rises to a greater height than normal and continues to rise still higher during the additional hour or more after the stomach would normally be empty but still contains food. This curve is highly characteristic but not actually pathognomonic, of a duodenal ulcer that is reflexly affecting the activity of the pyloric sphincter

Perforation—Acute perforation is the most serious complication of a duodenal ulcer and once a case is seen, the picture is not likely to be forgotten or confused with any other abdominal condition. The onset is usually sudden and dramatic. The patient is suddenly seized with excruciating abdominal pain. There is a characteristic boardlike rigidity of all the abdominal muscles even including the diaphragm. The patient lies on his back, and will not allow himself to be moved. The legs are flexed and the body is fixed to ease the pain and to protect the abdomen from any contact. Prolonged and gentle palpation fails to effect the slightest yielding. This rigidity is an infallible indication of the presence of a lesion requiring surgical intervention. The patient is usually not shocked. The pulse is usually of excellent quality and if there is any change in rate, it is slightly elevated. The temperature is at first subnormal, in delayed cases occur all the symptoms of general peritonitis

Diagnosis—Before Perforation—A complete clinical history, physical examination, clinical laboratory tests and a roentgenologic examination will usually enable the surgeon to make a correct diagnosis. With the recent improvements in roentgen ray technic it is now possible to make a positive diagnosis in a

large proportion of cases. The x ray findings should agree with the history and physical examination. It may be necessary to make a second or even a third examination. Roentgenograms not only demonstrate retention and hyperperistalsis but will usually show a deformity of the duodenal cap which is considered indicative of a duodenal ulcer.

The condition may simulate chronic appendicitis or cholecystitis but the differentiation can usually be made with the proper investigation. It must be remembered that both of the above conditions may cause reflex disturbances of the pyloric sphincter and that they may also be complications of a duodenal ulcer.

Acute Perforation — Perforation can usually be demonstrated on roentgenograms but a barium meal is absolutely contraindicated in the presence of an acute intra abdominal pathology. The examination must be very brief. The exposure should be made while the patient holds the breath for a moment. If a bubble of gas is shown free in the peritoneal cavity above the liver it is an early and conclusive evidence of perforation.

It is frequently necessary to differentiate acute perforation from one of the following conditions.

Acute Pancreatitis — This is a very infrequent condition while perforation is comparatively common. The pain in pancreatitis is more excruciating and the tenderness is more marked in the upper left part of the abdomen. The pulse in acute pancreatitis is usually very fast and it is almost impossible to relieve the pain by morphine. The patient appears to be in a much greater shock and in place of lying quietly in the bed he tosses around a great deal in an effort to secure relief from the pain.

Biliary Colic — This is usually found in women past the age of forty years. The pain is not so severe as in acute perforation, the rigidity is not so marked and the patient does not take on the fixed position. The pain usually radiates through to the back and up to the right shoulder blade and there is usually more definite tenderness under the lower border of the ribs on the right side.

Intestinal obstruction should be suspected if there has been a

previous abdominal operation or if in an aged person there is a history of pronounced constipation. In these cases a flat x ray plate may establish a diagnosis as beyond the age of infancy if you are able to demonstrate gas in the small intestine it is quite conclusive evidence of an obstruction.

Acute Conditions of the Thorax—Abdominal rigidity and tenderness are neither so striking nor so universal as in perforation and a slight relaxation especially at the end of each expiration may be found in the hypogastric or iliac region. The temperature is always raised from 2 to 4 degrees while it is at first depressed in a recent abdominal disaster. The normal ratio of pulse to respiration is about four to one. If it is three or two to one the trouble will usually be found above the diaphragm and not in the abdomen.

Acute Appendicitis—In young children and young adults acute appendicitis is the most common condition requiring surgical treatment. The history and physical examination should differentiate these conditions without any trouble.

Ruptured Tubal Gestation—This condition can easily be differentiated by the clinical history and the physical examination which should always include a vaginal examination.

Kidney Colic—If a duodenal ulcer ruptures posteriorly or retroperitoneally the symptoms may resemble those of kidney colic. In renal cases the pain is found chiefly in the right kidney region and over the appendix. Examination of the urine may show red blood or pus cells. The underlying condition can usually be diagnosed without difficulty. Thrombosis of mesenteric vessels though very rare must be kept in mind. The gastric crisis of locomotor ataxia must also be considered. A brief neurological examination will usually give some conclusive evidence.

The time element is the principal factor in the formidable death rate in emergency surgery of the peritoneal cavity. While the character of the pathology cannot always be judged by the time which has elapsed since the onset of the symptoms the prognosis is invariably dependent upon it.

Bower has recently reported the mortality statistics of more

than 1000 abdominal emergencies from the Samaritan Hospital in Philadelphia. Among these were 52 cases of ruptured duodenal ulcer in which the mortality ranged from 4.35 per cent for the early operation to 60 per cent for the delayed operation. Statistics such as these demonstrate most conclusively that the principal factor in diminishing the mortality in ruptured duodenal ulcer is the lessening of the time between the onset of the symptoms and the subsequent operation.

The condition is usually first seen by the general practitioner and his responsibility is almost as great as that of the operating surgeon. The physician must realize that certain cases are essentially surgical and not medical and that in these cases surgery should be a first and not a last resort. These cases should be seen without delay by a surgeon and one should not wait to see whether improvement takes place for such improvement is common and deceptive.

While it is both an advantage and a satisfaction to make a correct diagnosis the most important thing is to recognize the demand for immediate surgery. With the possible exception of cholecystitis and salpingitis surgical intervention is demanded in any case of acute abdominal pain which lasts for more than six hours in a previously well person if accompanied by vomiting, an increasing pulse rate or some other characteristic sign or symptom. One is rarely justified in opening the abdomen for pain alone. Whipple's rule is to eliminate nonsurgical conditions and then to operate. If this is adhered to it will save many lives.

The prognosis is excellent if operation is performed within eight to twelve hours after the rupture occurs but becomes rapidly worse after twelve hours. It is rare that recovery takes place if twenty-four hours have been allowed to elapse before the operation.

Treatment—The treatment which we shall outline has been successfully employed in 12 cases of ruptured duodenal ulcer. All of these patients had a most satisfactory recovery. The rupture was diagnosed preoperatively in all of the cases. The time elapsing between the initial appearance of the symptoms and the operation varied from two to eighteen hours.

Anesthetic—Spinal anesthesia is the anesthetic of choice in these cases as it allows the work to be done with the least amount of trauma and should be employed in all cases unless the condition is an extreme degree of shock which is very rare. Following spinal anesthesia the amount of postoperative complications are reduced to a minimum. In these cases there is no time for any extensive preoperative examination or preparation. Twelve cases of acute perforation have come under our care. In eleven of these cases the rupture was rapidly closed with no consideration of the anatomical or functional results of the pylorus and a posterior gastro enterostomy was performed. No attempt was made to wash out the peritoneal cavity. Drainage was secured through the incision and through a stab wound made above the symphysis pubis.

The other case was treated by a simple closure of the rupture. The patient made an uneventful recovery but the gastric symptoms returned and a second perforation occurred about a year later. This was again closed without any other surgical procedure but the gastric symptoms soon reappeared. A posterior gastro enterostomy was performed sometime later and this relieved the symptoms.

Postoperative Care—The Fowler position is important for besides its reputed value in the treatment of peritonitis it also aids drainage and adds comfort to the patient. It is important that the patient receive an adequate amount of fluid. Fluids by mouth are contra indicated for from two to four days. In all of our cases from 3000 to 5000 cc of saline and glucose were given every twenty four hours. It is important to keep the stomach empty. We accomplished this by inserting a continuous drainage tube through the nose or if the patient objected to this by emptying the stomach two or three times daily by means of a small tube passed through the nose. This is very simple and easily accomplished by cocaineizing one side of the nasal passage before introduction of the tube. If the tube is left in place the patient may have the added comfort of drinking all the water he wishes. Pain is controlled by morphine hypodermically. Sodium amytal by rectum is a valuable adjunct. Pulmonary complications

were prevented by frequently changing the position of the patient and in inhalations of carbon dioxide. Patients who are seriously ill may advantageously be placed in an oxygen tent.

Operations for acute perforation of the duodenal ulcer must be performed by whatever surgical or hospital facilities that are immediately available. As the technic of a posterior gastro-enterostomy is well established, gives a mortality of less than 2 per cent, and is familiar to practically all surgeons, it would appear that a simple closure of the perforation without any anatomical consideration followed by a posterior gastro-enterostomy is a very safe and satisfactory method and will give a percentage of permanent cure equal to gastro-enterostomy done for chronic ulcers of the duodenum. For those with a greater amount of experience in gastric surgery, the plastic operation on the pylorus as devised by Balfour will probably give equally as good result with the added advantage that any ulcer on the posterior wall which is not uncommon will be discovered and may be adequately treated. An ulcer on the posterior surface should be strongly suspected when the patient gives a history of hemorrhage. The failure to recognize these ulcers accounts for the large percentage of unsatisfactory results following gastro-enterostomy for duodenal ulcer. This is especially true in recurrent hemorrhages after gastro-enterostomy and excision of the anterior ulcer if posterior ulcer has been overlooked or inadequately treated. For some time past it has been the popular belief that ulcers of the duodenum are singular and the combination of ulcers of the duodenum and the stomach are uncommon, but it is now a recognized fact that ulcers of the duodenum may be multiple and ulcers of the duodenum and the stomach are not uncommonly found in the same case.

Gastro-enterostomy has probably the largest field of any operation in the treatment of duodenal ulcer. It is most valuable in cases of large ulcer with marked stenosis or in cases where ulcer recurs following a pyloroplasty. The results are satisfactory in 87 per cent of all cases. The mortality varies from 1 to 2 per cent.

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CLINIC OF DRS ALANSON WEEKS AND G. D. DELPRAT

ST. LUKE'S HOSPITAL, SAN FRANCISCO, CALIFORNIA

BANTIS DISEASE

This child was born in Tonopah, Nevada, ten years ago and has lived the entire time. She has had the usual childhood diseases, none of which were severe.

About two years ago she started to have the first of a series of three attacks of abdominal pain which were apparently due to an umbilical hernia. The last of these attacks was ushered in by abdominal pain and vomiting and tenderness in the region of the umbilicus, so that the doctor who saw her diagnosed a strangulated umbilical hernia. This however subsided under treatment and on October 5th she was sent to San Francisco to have the hernia repaired and also for a diagnosis of a lump on the left side which had been felt during examination at one time.

When she came to us she was a well developed, well nourished child. She complained of no pain and apparently was in the best of health. The only complaint was that of hunger, inasmuch as she had been starved for the past two days. She was moderately pale, although her hemoglobin was 80 per cent and she had 4,760,000 red blood cells. Examination of heart and lungs was negative and her blood pressure was 95/58.

On October 11th she was seen by Dr. Moffitt. Investigations were made in his office including gastro-intestinal series which were negative except for the fluoroscopic diagnosis of enlarged spleen. Following the examination in his office while she was standing on the sidewalk waiting for a street car she had a sudden profuse hemorrhage and her mother states she vomited a quart of blood. This was the second time she had had such hemorrhage, the first time being some years back and a much smaller amount which the mother had previously forgotten. She was rushed back to Dr. Moffitt's office and was kept perfectly quiet until after the hemorrhage had apparently subsided when she was brought to St. Luke's Hospital in an ambulance.

The essential laboratory findings at this time were negative except that the hemoglobin was now 60 per cent and the red count 3,000,000 cells. She had no fever. On October 10th it was decided to submit the child to splenectomy.

As we now outline the mass on the left side it occupies practically the whole of the left upper quadrant and extends below the umbilicus. It moves somewhat with respiration and is not tender. We see that the umbilicus admits the index finger very readily and there is not the slightest indication

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The patient had very severe pain in the left shoulder immediately after operation which persisted for three weeks and was relieved somewhat by compresses. Because of the age of the patient opiates were given very sparingly. This pain was evidently due to a segmental irritant reflex from the diaphragm.

The wound healed per primum and the child had no further hemorrhages. At the time she left the hospital her hemoglobin was 50 per cent and the red count 4 000 000 and blood pressure 106. She was able to leave the hospital six weeks after operation.

Four months later we heard from the patient's aunt that she had gone back to school, taking a tremendous interest in her books. Before operation, she was inattentive and a poor scholar. Since the operation her grades have all been above 90 and she has made very marked improvement physically.

of strangulation at this point. It will need to be repaired at some later date but for the present we need not concern ourselves with it further. She has a splenic tumor, she has anemia and she has a tendency to bleed. This is the typical clinical picture of Banti's disease. Before her hemorrhage and before the onset of the anemia, we were not so sure, because then with only the presence of the tumor to guide us, we might consider that she had a kidney tumor or a cyst in the spleen. Hydatid cysts frequently occur in the spleen, and there are a number of sheep in Nevada.

We will now make a long, left rectus incision, starting from the edge of the costal margin down to and somewhat below the level of the umbilicus. Immediately below this incision is the enormous spleen. It extends from under the costal margin to below the umbilicus and fills the entire left upper side of the abdomen. Attached to it is the omentum with a number of very dense adhesions. These adhesions are particularly dense and firm along its medial aspect, but some of them sweep over and attach to its surface. Each of these adhesions contains an enormous vein which vein dips into a little depression of the capsule of the spleen and is lost in its substance. They must be tied very carefully close to the spleen's surface. One does not see these cases very often and in the intervening interval is apt to forget how extremely vascular these adhesions are. If an adhesion is inadvertently torn the bleeding is very profuse. For some reason this fact seems to have been omitted out of the text books describing splenectomy in Banti's disease. Some of these adhesions are between the abdominal wall and the spleen on the left side. They also are tied and divided with care because apparently each adhesion is so vascular. These are cut and the hand is passed over the surface of the spleen and a number of very heavy adhesions are felt on the extreme left border deep in the abdomen. These are divided in the same way, with more trouble since they are less accessible. The spleen is now freed from the major portion of its surface and we will isolate and ligature and divide the pedicle between clamps. Here again the veins are enormous.

During the manipulation of the spleen and the tying off of all these adhesions we see the body has shrunk considerably. This is undoubtedly due to the squeezing out of the blood into the circulation. The pedicle being tied the spleen is now pulled out of the abdomen and a number of smaller adhesions are torn through. These bleed fairly readily but we think will be controlled by the hot packs which we will now insert in the splenic fossa. On removing the pack we see the large cavity which the spleen occupied extending upward to the diaphragm and below to the pancreas. Further down is the kidney.

The abdomen is now closed in layers and the child will be returned to her bed. She received 1000 cc of salt in the thighs during operation. Her

posterior wall and the organized blood clot from the splenectomy. There were no signs in this area at any time of pneumonia.

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CLINIC OF DR. PARK WEED WILLIS

SEATTLE GENERAL HOSPITAL SEATTLE, WASHINGTON

OPERATIONS FOR TEMPORARY BENEFIT IN OTHERWISE INOPERABLE CARCINOMA

THE word "inoperable" has a variable meaning, changing with the improvement in surgical art and science. We are striving more and more for early diagnosis. Notwithstanding there are many locations for cancer where it is practically impossible to know the condition in time for a successful operation. Again there are organs which when involved preclude the removal of the growth. These are becoming fewer as surgery advances.

Today we have 2 cases that are distinctly considered in the inoperable class.

Case I—The first patient is a rather thin female sixty-two years old with a history of death from cancer of the paternal grandfather, the maternal grandmother, one maternal aunt, and the mother also had uncles and aunts who died of cancer. In accordance with the great epoch-making work of Dr. Maud Sly, it is not surprising that this patient should develop a carcinoma. She gives the following history. When seventeen years old she was taking a large capsule for an anemic condition. She says that it stuck in her throat and from that time she continued to have more or less difficulty in swallowing. In 1899 when she was thirty-one years old she was attended by a physician in Providence, Rhode Island, who cauterized her throat twice a week with nitrate of silver. Then she was treated by a physician in Washington, D. C., by electricity. The throat condition continued to get worse until she could not swallow anything but liquids. In 1908 a physician in Port Gamble, Washington, passed a small catheter and gradually increased the size under cocaine anesthesia until a large catheter was passed and, as she says, he broke the structure. After passing a tube the size of a ten-cent piece three times a day for several months she was relieved and could swallow without any difficulty. Her general health was good until I was called to see her in February, 1911.

I found her with a hoarse voice and she explained that it commenced following a hockey game two or three weeks previously when she had used her

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the upper trachea just below the level of the larynx with almost complete obstruction of the esophagus at this point—probably a malignancy

The only other possible diagnosis is retrotracheal abscess. I feel, however, that this can be ruled out by the long history and lack of inflammatory symptoms

I then referred her to Dr. Waltz who made a direct examination with the esophagoscope and took out a piece of the tumor for microscopical examination and both from the direct examination with the esophagoscope and the microscopical examination of the piece that was removed a diagnosis of carcinoma was made

Finally on Sunday February 22d she was unable to swallow even a drop of water and on the 23d I did a gastrostomy after the Stamm method. She is also having deep x ray therapy and if it is possible later to get a tube of radium into the esophagus this will be placed there for treatment. The outlook here is unfavorable but the gastrostomy allows for feeding so that she will not die from starvation



Fig. 420. X-rayenogram showing pathological fracture of humerus

Case II.—The patient is a fleshy woman age sixty four years. Thirteen years ago she had a radical operation in Winnipeg for cancer of the breast

voice violently and she had been hoarse since that time. I sent her to Dr Charles Q. North who examined her and reported as follows:

Patient appears to have a malignancy of the esophagus (to be proved) compressing the larynx and trachea.

I also ordered an x ray examination with the following result according to Dr. Harold B. Thompson:

The x ray examination of your patient shows under the fluoroscope a very definite practically complete obstruction of the esophagus just below the lower level of the larynx. This was so complete that even one teaspoonful of barium failed to pass after numerous forcible attempts at swallowing except for a very few drops which finally oozed through. There appears to be a very



Fig. 419 — Roentgenogram showing carcinoma of upper esophagus

the soft tissue space between the trachea and the cervical spine extends downward from the lower level of the larynx as far as visible on the film. This enlargement of the soft tissue area very definitely encroached on the lumen of the trachea from behind (Fig. 419).

The anteroposterior view shows some distortion of the trachea at about the level of the seventh cervical vertebra or first dorsal, but the trachea is not displaced materially to either side. A semilateral view gives no additional information.

These findings indicate a soft tissue tumor shadow situated posterior to

the upper trachea just below the level of the larynx with almost complete obstruction of the esophagus at this point—probably a malignancy.

The only other possible diagnosis is retrotracheal abscess. I feel however that this can be ruled out by the long history and lack of inflammatory symptoms.

I then referred her to Dr. Waltz who made a direct examination with the esophagoscope and took out a piece of the tumor for microscopical examination and both from the direct examination with the esophagoscope and the microscopical examination of the piece that was removed a diagnosis of carcinoma was made.

Finally on Sunday February 22d she was unable to swallow even a drop of water and on the 24d I did a gastrostomy after the Stamm method. She is also having deep x ray therapy and if it is possible later to get a tube of radium into the esophagus this will be placed there for treatment. The outlook here is unfavorable but the gastrostomy allows for feeding so that she will not die from starvation.



Fig. 420.—Roentgenogram showing pathological fracture of humerus.

Case II.—The patient is a fleshy woman age sixty four years. Thirteen years ago she had a radical operation in Winnipeg for cancer of the breast.

voice violently and she had been hoarse since that time. I sent her to Dr Charles Q. North, who examined her and reported as follows:

Patient appears to have a malignancy of the esophagus (to be proved) compressing the larynx and trachea.

I also ordered an x-ray examination with the following result according to Dr Harold B. Thompson:

The x-ray examination of your patient shows under the fluoroscope, a very definite, practically complete obstruction of the esophagus just below the lower level of the larynx. This was so complete that even one teaspoonful of barium failed to pass after numerous forcible attempts at swallowing except for a very few drops which finally oozed through. There appears to be a very



Fig. 419.—Roentgenogram showing carcinoma of upper esophagus.

the soft tissue space between the trachea and the cervical spine extending downward from the lower level of the larynx as far as visible on the film. This enlargement of the soft tissue area very definitely encroached on the lumen of the trachea from behind (Fig. 419).

The anteroposterior view shows some distortion of the trachea at about the level of the seventh cervical vertebra or first dorsal, but the trachea is not displaced materially to either side. A semilateral view gives no additional information.

These findings indicate a soft tissue tumor shadow situated posterior to

